2000

Final Environmental Impact Statement Brown Creek Timber Sale

United States Forest Service

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Brown Creek Timber Sale

September 2000

Final Environmental Impact Statement

BROWN CREEK TIMBER SALE
FINAL ENVIRONMENTAL IMPACT STATEMENT

USDA - Forest Service
Payette National Forest
New Meadows Ranger District
Adams County, Idaho

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Abstract: This Final Environmental Impact Statement (FEIS) documents the analysis of three alternatives for the Brown Creek Timber Sale on the New Meadows Ranger District of the Payette National Forest. The Brown Creek project area is located on the east side of the New Meadows Ranger District, just south of Bally Mountain and just west of Granite Mountain.

Alternatives include No Action, as well as two Action Alternatives. The Preferred Alternative is the proposed action (Alternative II), which would harvest timber on an estimated 290 acres using tractor, skyline, and helicopter logging systems. Stand growth, health, and species composition would be improved by planting ponderosa pine, Douglas-fir, and western larch seedlings on an estimated 258 acres. No new roads would be constructed, and 16.6 miles of road, both open and closed, would be improved for timber haul. Road improvements would include graveling, blading, shaping, and installing rolling dips and relief culverts to improve drainage and reduce accelerated erosion. In addition, 13.8 miles of open road would be closed year-round to public motorized vehicles, and 3.9 miles of road would be obliterated. The action alternatives would follow Forest Plan direction, Federal and State laws and regulations, and site-specific mitigation to protect Forest resources in the area.

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Figure S-1. Payette National Forest Vicinity Map With the Brown Creek Project Area

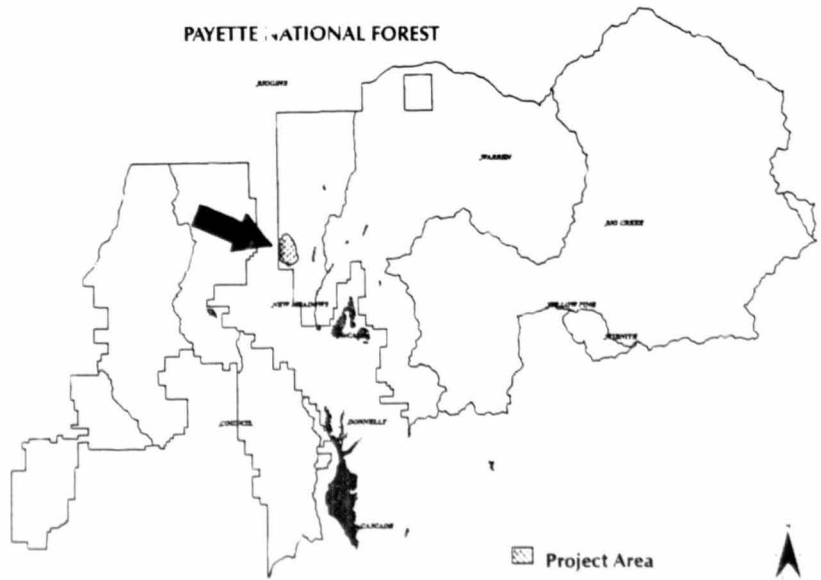

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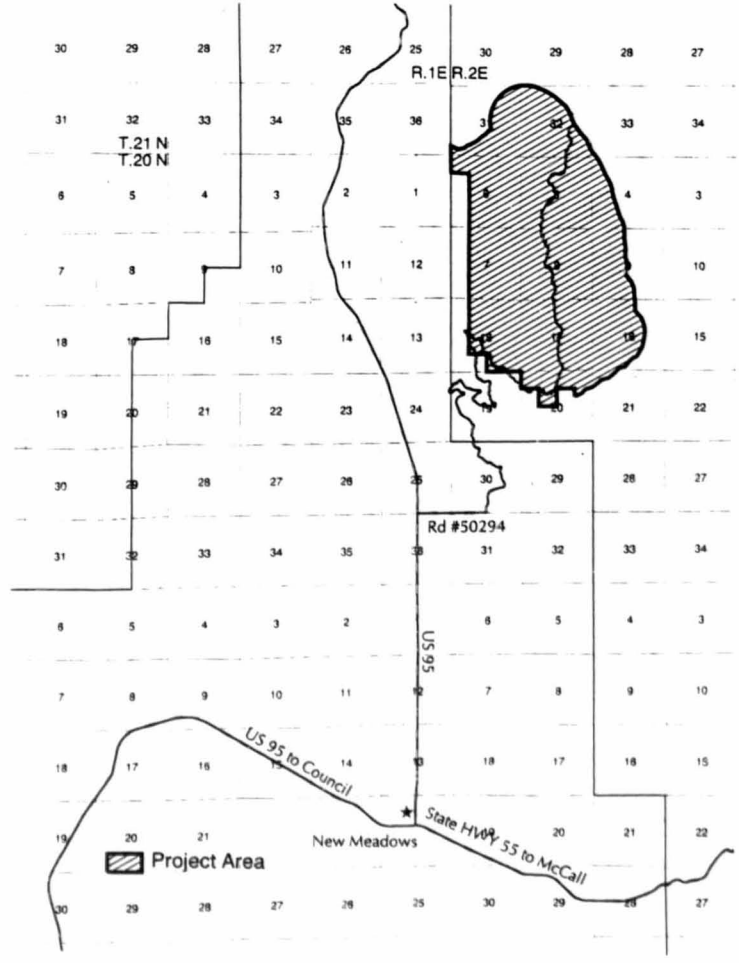
Figure S-2. The Brown Creek Timber Sale Project Area



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SUMMARY OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT

This Final Environmental Impact Statement (FEIS) analyzes and discloses the potential site-specific environmental effects of the Brown Creek Timber Sale on resources within and around the sale planning area on the New Meadows Ranger District of the Payette National Forest (see Figures S-1 and S-2 in the FEIS). This analysis is tiered to and supplements the analysis in the FEIS prepared for the Payette National Forest Land and Resource Management Plan (1988), hereafter referred to as the Forest Plan.

The Draft Environmental Impact Statement (DEIS) was a revision of the Brown Creek Timber Sale Environmental Assessment (EA) that the Payette National Forest released to the public in 1989 and re-released in updated form in 1998. Both EAs are herein incorporated by reference. An EA, Decision Notice (DN), and Finding of No Significant Impact (FONSI) for the Brown Creek Timber Sale were completed in 1989. Before the sale could be offered and sold, a series of events and changes occurred that caused the Forest to put the sale on hold until an Interdisciplinary (ID) team could reanalyze it. These changes included: identification of sensitive species by the Regional Forester; listing of the chinook salmon under the Endangered Species Act; adoption of ecosystem management principles by the Forest; large wildfires of 1994; incorporation into the Forest Plan of PACFISH guidelines (USDA/USDI 1995, *Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California.*); and new forest health concerns.

The Forest Service wanted to further analyze these changes and others that had occurred since 1989, and so convened a new ID team in 1996 to do just that. The ID team redesigned the 1989 preferred alternative to reflect changed conditions and management direction, and then analyzed the effects of this alternative and two other alternatives on pertinent resources in the area. The 1998 EA and DN were the result of that effort. The Forest Supervisor withdrew the 1998 decision as a result of new information on the roadless area and old growth that came to light through an appeal. The DEIS incorporated that new information.

Management Direction

Payette Forest Plan Direction

The Forest Plan, amended to include PACFISH direction, directs and integrates management of the entire Forest. This FEIS is tiered to the Forest Plan EIS and Appendices. The activities in the Proposed Action have been designed to meet Forest Plan direction. The Brown Creek Timber Sale is listed in the Activity Schedule of the Forest Plan, Appendix A. The current Payette Forest timber sale 7-year action plan, an updated version of the Activity Schedule, has this sale offered in 2000.

Because no single acre on the Forest can serve all uses at once, the Forest Plan allocates different emphases to different areas of the Forest, based on the land's capabilities. The Forest is divided into 26 Management Areas. The Brown Creek project area lies within Management Areas 10 and 11. Most of the project area is in Management Area 11 (Forest Plan, pages IV-203 to 210). The main uses in this area are timber and range management. The remaining area lies within Management Area 10 where the management emphasis is for dispersed recreation, grazing, wildlife, and watershed resources. Timber management may occur in Management Area 10 using helicopter yarding systems (Forest Plan, page IV-251). Additional management direction can be found in the Forest-wide goals and objectives, desired future conditions, and standards and guidelines found on pages IV-1 to IV-132 of the Forest Plan. The pertinent management direction is also summarized for each resource at the beginning of each resource section in Chapter 3 of this FEIS.

Agency Direction

On March 1, 1999, the Chief of the Forest Service directed the agency to adopt a temporary suspension of road construction and reconstruction in roadless and unroaded areas. This project conforms to the interim direction. A final policy for management of the Forest Service transportation system, including guidelines specific to roadless and unroaded areas, will be forthcoming sometime after this analysis is scheduled to be completed. In addition, the President has put forth an initiative dealing with management in roadless areas. A draft EIS has been prepared by the Agency that will analyze if, how, or when entry into the roadless areas will proceed in the future.

This project follows recent changes in management direction not covered in the Forest Plan. These changes include designation of sensitive species by the Regional Forester; the listing under the Endangered Species Act of bull trout, chinook, steelhead salmon, Canada lynx, northern Idaho ground squirrel, Ute ladies-tresses; the proposed listing of Spalding Catchfly; adoption of ecosystem management principles by the Payette National Forest, following the Management Recommendations for the Northern Goshawk; and incorporation of PACFISH guidelines to the Forest Plan.

The Chief has also proposed a natural resource agenda to direct general resource management on agency lands. The natural resource agenda identifies four key areas of focus for Forest Service activities. These are watershed health and restoration, sustainable forest ecosystem management, forest roads, and recreation. The proposed action would promote achievement of this agenda by: 1) reducing long-term sediment production; 2) protecting riparian areas and biodiversity; 3) attaining desired vegetative conditions and characteristics prior to fire exclusion (referred to as historic norms); 4) meeting habitat requirements for goshawk and other wildlife; 5) controlling noxious weeds; 6) reducing fuel buildups; 7) not building any new roads in either roaded or roadless areas; 8) restoring and maintaining selected existing roads by graveling, resurfacing and restricting access; and 9) obliterating and decommissioning substandard, unneeded roads.

The Proposed Action

The Proposed Action is a timber sale with connected project activities summarized below. The proposed Brown Creek sale project area is located on the east side of the New Meadows Ranger District, just south and east of Bally Mountain and just west of Granite Mountain in Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 20, and 21, T20N, R2E, Boise Meridian; and sections 31 and 32, T21N, R2E (see Figure S-2). Access is from the south on Forest Service Road 50294.

The project area is an estimated 5,219 acres that lie within three subwatersheds: Brown Creek, Sixmile Creek, and Middle Little Salmon (see Figure 3-1). The Brown Creek subwatershed drains into Hard Creek, which is a priority watershed for protection of chinook salmon habitat. A small portion of the project area lies within the Patrick Butte Roadless Area (see Figures 3-6 and 3-7).

The Proposed Action would:

- Harvest an estimated 290 acres of timber using tractor, skyline, and helicopter logging systems (see Chapter 2, Alternative II description and Figure 2-1, and Appendix E, Tables E-1 and E-2).
- Improve 16.6 miles of road, both open and closed, for timber haul. Road improvements include graveling, blading, shaping, and installing rolling dips and relief culverts to improve drainage and reduce accelerated erosion. Close 13.8 miles of open road year-round to public motorized vehicles. Obliterate 3.9 miles of road. See Chapter 2, Figure 2-3 for road locations.

- Ensure desired species and stocking levels where regeneration is needed by planting ponderosa pine, Douglas-fir, and western larch seedlings on an estimated 258 acres.
- Treat harvested areas to reduce existing and activity fuels on an estimated [illegible] acres.
- Follow Forest Plan direction, Federal and State laws and regulations, and mitigation listed in Chapter 2 of this FEIS to protect all resources in the area.

More detailed information on the Proposed Action is located in Chapter 2, *Alternatives Considered in Detail* section, under the description of Alternative II, and in Appendix E.

Purpose and Need

The ***purpose*** of the Proposed Action is to improve the condition of timber stands within the Brown Creek project area in accordance with the goals, objectives, and Desired Future Condition described in the Forest Plan. In particular, the Proposed Action addresses the Forest Plan goal to "manage suited timber acres to near site potential to produce commercial crops of trees suitable for timber production." By doing so, the Proposed Action would increase long-term health, diversity, and productivity of the timber resource, while providing wood products and reducing risks from insects, disease, and high-intensity fire.

The ***need*** for the Proposed Action is generated by the difference between existing timber stand conditions in the project area and the desired conditions for stands in the area as stated in three categories: 1) Forest Structure; 2) Vegetative Characteristics and Conditions (Historic Norms); and 3) Growth and Vegetative Health. The Proposed Action is designed to move vegetative conditions closer to desired conditions. The conditions are summarized in Chapter 1 of this Final EIS.

Decisions to be Made

The responsible official for this proposal is the Forest Supervisor. Based on the analysis in this document, the responsible official will make the following decisions in the Record of Decision for this FEIS:

- Should the planning area be entered at this time for timber harvest and regeneration?
- If so, how many acres should be treated and regenerated?
- Where and how would timber be harvested?
- What roads are needed for this project and future management, and what roads can be closed or obliterated to improve watershed resource conditions in the area?
- What management requirements and mitigation measures are necessary to meet Forest Plan standards and guidelines for all resources?
- What monitoring requirements are appropriate to evaluate project implementation and effectiveness?

Scoping and Issues

In addition to scoping conducted for the two previous EAs for this project, the Forest sent a scoping letter to interested or affected members of the public on March 3, 1999, to identify any additional issues or concerns. A Notice of Intent (NOI) was published in the *Federal Register* on March 11, 1999. The DEIS was issued in September of 1999. The comments received on the DEIS are addressed in Chapter 4 of this document. Summarized below are the major and other issues identified by the ID team.

Major Issues

Major issues are those that require project-specific alternatives, mitigation measures, or design elements to address the effects that proposed activities may have upon them. The major issues briefly described below are discussed in detail in Chapter 3. Chapter 2 includes a summary comparison of how the various alternatives would affect indicators of the major issues.

Water Quality and Soil

Proposed project activities (timber harvest, road management) may accelerate erosion and sediment delivery in the project area. Accelerated erosion and sediment delivery are a primary source of water quality degradation in many Payette National Forest watersheds. Sediment can adversely affect cold water biota and other beneficial uses. Disturbances from road construction and reconstruction, timber harvest and associated activities, like brush disposal and site-preparation, can increase erosion and sediment delivery. Surface erosion is highest the first year after such disturbance, and rates decline rapidly as the exposed soil revegetates over time. Existing roads are the primary source of long-term management-related sediment. Mitigation such as graveling road surfaces, or the obliteration and revegetation of non-system roads, can reduce sediment over the long-term. The **indicator** used to measure effects by alternative is sediment production as predicted by the BOISED model.

Proposed activities (timber harvest, road management) may affect long-term soil productivity within the project area. The long-term sustainability of forest ecosystems depends on the productivity and hydrologic functioning of soils. Ground-disturbing activities like timber harvest, site preparation, and brush disposal activities can directly affect soil properties that contribute to productivity. Soil disturbance displaces and mixes soil organic layers, alters soil properties, and reduces porosity. The biological productivity of soil depends on the amount of organic matter in the topsoil and on the forest floor. The **indicator** used to measure effects to soil productivity is termed Detrimental Disturbance. Detrimental soil disturbance can reduce the soil's ability to supply enough nutrients, moisture, and air to support soil microorganisms and vegetative growth. The Forest Plan directs that no more that 20 percent of an activity area be in this condition (pg IV-73).

Certain uses, such as roads and landings, commit the soil resource to a nonproductive condition for an extended period of time (50 years or more). The **indicator** used to measure effects by alternative is the percent of the project area in a condition of Total Soil Resource Commitment. The Forest Plan directs that no more than 5 percent of an activity area be in this condition (pg IV-73).

Wildlife Habitat

Proposed project activities (timber harvest, road management) may affect the abundance, distribution, structure, and function of goshawk habitat and the habitat's ability to support goshawks in and near the project area. The northern goshawk is one of 16 wildlife species listed as sensitive for the Payette National Forest by the Regional Forester. A sensitive species is one that is susceptible or vulnerable to management activity impacts or habitat alteration. Maintaining an adequate amount and distribution of goshawk habitat is essential to the survival of the goshawk in the project area. A pair of goshawks has occupied a nesting area within the project area for the past several years. The **indicator** used to measure effects by alternative is the degree to which the project meets the habitat requirements of the goshawk within nesting, post-fledgling and foraging areas.

Proposed management activities may affect the abundance, distribution, and function of old growth as defined by the Forest Plan, page IV-34. This issue is assessed in the Wildlife Habitat section of Chapter 3 of this Final EIS. The **indicator** used to measure effects is the percentage of old growth retained in any theoretical pileated woodpecker home range circle the project area is within.

Proposed project activities (timber harvest, road management) may affect the abundance, distribution, structure, and function of elk habitat and the habitat's ability to support elk in and near the project area. The Rocky Mountain elk is a management indicator species for the Payette National Forest. Their population levels and habitat conditions indicate the potential impacts to habitat caused by human activities, including those associated with forest management. The elk is a general forest habitat species, representing species that are adapted to use a variety of structure and composition. The Forest Plan established elk habitat effectiveness (EHE) as an indicator of an area's value as elk habitat. The project area falls within two Issue Reporting Areas. The target EHE value for Issue Reporting Area (IRA) 365 is 30, and the target value for IRA 362 is 85. The **indicator** to measure effects by alternative is the EHE value compared to the Forest Plan's target EHE for the IRA.

Vegetation, Fire and Fuels

Proposed project activities (timber harvest, slash treatment, reforestation, etc.) may affect the current forest structure, vegetative characteristics and conditions of stands, and the current growth and health of timber stands in the project area. The Forest Plan emphasizes management of the timber resource in this area to achieve growth objectives that are near site potential. Currently many stands are not achieving this. Also, many stands have departed, or soon will depart, from historic norms for vegetative characteristics, including species composition, stand density, fuel loading, insect and disease activity, and stand structure. The **indicators** used to measure effects by alternative include: percent of vegetative structural stage (VSS) in each class to measure forest structure; acres of improved characteristics and conditions for tree species composition, stand structure, stand density, insects and disease, and fuel loading; and acres of improved tree growth and health.

Roadless Character and Wilderness Potential

Proposed project activities (timber harvest, slash treatment, reforestation) may affect the roadless character and wilderness potential of a small portion of the Patrick Butte Roadless Area. The Proposed Action would harvest an estimated 105 acres by helicopter on the edge of the 80,000 acre Patrick Butte Roadless Area. No roads would be constructed in the roadless area. Figure 3-6 shows the roadless area boundary in relation to the proposed units. The ID team considered effects on the roadless area to be relatively minor due to the reasons listed above. Because of the controversy associated with roadless entry of any kind, the team developed and analyzed a variation of Alternative II that did not enter the roadless area (see Chapter 2, Alternative III). The **indicators** used to measure effects by alternative include: acres in the roadless and project area eligible for future wilderness consideration; effects on wilderness attributes, including natural appearance and integrity; opportunities for solitude and primitive recreation; and special features.

Other Issues

These issues did not require project-specific alternatives or mitigation measures to address the effects that proposed activities may have upon them. The ID team considered these issues, but alternative effects on them are not analyzed or displayed in detail in the FEIS for the reasons given below.

Air Quality

Dust from logging traffic and smoke from slash burning would have minor, short-term (days) effects to air quality. Slash burning would only be conducted under specific prescribed weather and fuel conditions to minimize the amount, direction, and duration of particulate emissions. These burn prescriptions would comply with State of Idaho Air Quality Regulations and the Clean Air Act (see Chapter 2, *Management Requirements* and response to comments on page 4-5 in Chapter 4).

Biodiversity

This project was designed to maintain biodiversity in the project area over the long term by improving the distribution of vegetative structural stages and reducing the risk of high severity fire (see *Vegetation, Fire, and Fuels* section, Chapter 3).

Although biodiversity is not a separate issue, discussion and analysis on key elements of biodiversity are woven into the resource sections in Chapter 3. Specifically, the *Water Quality and Soils* section covers water quality, stream channel conditions, riparian areas, coarse woody debris, and soil productivity; the *Wildlife Habitat* section addresses management indicator species, TES species, old growth, snags, and cover; and the *Vegetation, Fire, and Fuels* section discusses stand structure and density, and species composition, as well as natural processes like fire, succession, and insects and disease.

Economics and Socio-economics

Economics and socio-economics were not considered a major issue because the 1989 preferred alternative addressed them in its development. The current Proposed Action was developed from this alternative. Less economic efficient helicopter yarding systems were used in the Proposed Action only when no other viable system could be used given other resource concerns (water quality, wildlife habitat, roadless character). An economic and socio-economic analysis has been completed and is included in the project record. Table S- 1 summarizes the results.

The values for returns to the government are negative for several reasons. The loss to the government in Alternative I reflects the estimated cost of this environmental analysis and supporting overhead. The loss to the government in Alternatives II and III includes the cost of the analysis, supporting overhead, sale preparation, sale administration, and $192,500 to gravel and improve existing roads. All of the estimated costs are subtracted from the estimated returns realized from the sale of the timber. Forest Service timber support costs have increased due to additional analysis requirements, national and regional policy changes, appeals and lawsuits, and additional mitigation requirements. The value of the timber offered for sale has decreased due to an increase in offering of lower value small diameter whitewoods. The harvesting costs have also increased due to increased reliance on expensive helicopter yarding and a reduction in the use of more economical ground based harvest systems due to the interim roads policy. Alternatives II and III would be below-cost sales, meaning it costs the Forest Service more to prepare the timber sales than the amount of money collected from the sale of the timber. The action alternatives are not deficit sales; however, the value of the timber sold would pay for all required reforestation and other sale contract related activities.

Table S-1. Summary of Economic and Socio-economic Effects by Alternative

Indicator	Alternative I	Alternative II	Alternative III
Present Net Value ($)	-$336,714	-$309,819	-$198,398
Jobs per year for 10 years	0	5.7	2.9
Income per year for 10 years	$0	$243,432	$121,804
Payments to Counties	$0	$173,819	$145,317

Fish Habitat

Effects to fish habitat and TES populations were analyzed in the biological assessment and biological evaluation that are part of this project and are incorporated here by reference (see project record, *Biological*

Assessment for Spring/Summer Chinook Salmon, Steelhead Trout, and Bull Trout, and *Biological Evaluation for Westslope Cutthroat Trout and Spotted Frog*). Although no threatened or endangered fish species are known to occur in the Brown Creek project area, special emphasis was taken in redesigning the preferred alternative between the 1988 and 1998 EAs to reduce impacts to water quality and fish habitat because the project area lies in a priority watershed for anadromous fish. This emphasis is reflected in the following design features:

- No new road construction.
- Helicopter yarding to limit effects in the roadless portion of the project area.
- PACFISH RHCA buffers to protect all riparian and landslide-prone areas.
- Obliterating and returning to productivity 3.9 miles of existing road.
- Year-round closure to public motorized vehicles 13.8 miles of currently open road.
- Graveling 5.8 miles of existing road, plus all road stream crossings used for timber haul.
- Additional mitigation to control accelerated erosion and sediment delivery produced by the project.

These features would reduce overall sediment production and delivery in the project area over the long-term (see *Water Quality and Soil* section, Chapter 3). For the reasons listed above, the ID team did not consider fish habitat to be a major issue, and therefore it was not analyzed in detail in Chapter 3 of this document.

On July 29, 1998, the National Marine Fisheries Service (NMFS) issued a letter of concurrence for the project, agreeing that the action is "not likely to adversely affect" listed Snake River spring/summer chinook salmon, Snake River steelhead or designated critical habitat. On September 22, 1998, the U.S. Fish and Wildlife Service issued a letter of concurrence on bull trout, agreeing that the action is "not likely to adversely affect" bull trout or designated critical habitat. These documents can be found in the project record.

Cultural Resources

The Forest conducted cultural resource surveys in the project area, and the Forest archaeologist determined that no known sites would be affected by this project. This finding was sent to the State Historic Preservation Office (SHPO) for concurrence. SHPO concurred there would be no impacts to the cultural resources of the area provided that one site is avoided (see 11/14/89 concurrence form in project record). This site would be avoided, as it is not in or near any road or harvest unit. If any other sites were discovered during the preparation or operation of this sale, work would stop until the Forest Archaeologist could assess the situation and recommend appropriate actions (Chapter 2, *Management Requirements*).

Noxious Weeds

Known noxious weed infestations occur within the project area. The acres and levels of these infestations have not been inventoried to date. Overall, the action alternatives would not have much affect on noxious weeds. Although increased traffic during the sale would pose a risk of introducing or spreading noxious weed species, this effect would be offset by the decrease in long-term access resulting from road closures. Surveying for and treating noxious weeds in the sale area is a management requirement for this project (see Chapter 2, *Management Requirements*). The timber sale may also generate funds to do some noxious weed eradication (see Chapter 2, Alternative II, *KV Opportunities*). A variety of methods may be used for eradication, as long as they meet current Forest direction and constraints.

Range

The proposed sale activities would have no known adverse effects on rangelands, range permittees, permits, or allotment management. There would be some short-term effects to the livestock permittee to ensure plantations are protected, but this is standard operating procedure. Rangeland conditions are expected to improve over the long term as plantations created by the action alternatives are opened for grazing. See page xvii for KV opportunities. (See project record)

Recreation and Visual Quality

Recreation and Visual Quality were not considered major issues for this project for the following reasons:

- Little recreation use occurs within the project area except during hunting season.
- The Recreation Opportunity Spectrum (ROS) setting is mainly Roaded Modified.
- Two trails bisect the project area, but use is low.

One of these trails, the Bally Mountain trail, #166, would bisect a cutting unit in the Preferred Alternative. This trail would be protected as described in Chapter 2, *Management Requirements*. Portions of units from the Selected Alternative in the September 1998, Decision Notice were dropped to protect the Granite Mountain trail, #165. The visual quality objectives (VQO) for this area would be met with this proposal. Most of the project area is in a modification VQO (see 1989 EA, page 12).

Roads and Access

Access was considered a minor concern because, even with the road closures proposed, sufficient open roads would remain to provide adequate access to that portion of the project area that is currently roaded. See Chapter 2, Figure 2-3, for a map of open and closed roads. Road closures would be done for two main reasons:

1 – To reduce erosion and sedimentation in order to improve fish habitat; and

2 – To improve elk habitat effectiveness by reducing elk vulnerability.

The closed roads could still be used for administrative purposes. Nearly 4 miles of road obliterations would occur with either action alternative. These are roads that are no longer needed for the administration of National Forest System lands, and removing them would help to reduce long-term sedimentation rates.

Threatened, Endangered, and Sensitive Plant Species

The Forest conducted botanical surveys in the project area and found no habitat for Forest sensitive plants or the threatened species, Ute ladies'-tresses. The Forest botanist completed a Biological Assessment (BA) and Biological Evaluation (BE) that determined this project is not likely to adversely affect Ute ladies'-tresses or impact any sensitive plants species. The U.S. Fish and Wildlife Service concurred with the BA determination in a letter dated 09/22/98. The BA, BE, and concurrence letter are in the project record.

In December 1999, Spalding catchfly, a grassland species, was proposed as threatened. No populations are known to occur within the project area. Currently, the Forest Botanist is developing a model of potential habitat for Spalding catchfly based on the Section 7 guidelines of the Endangered Species Act. If potential habitat occurs within the planning area additional surveys will be conducted to ensure that no TES species are impacted.

Wetlands and Flood Plains
PACFISH buffers would effectively protect wetlands and flood plains from disturbance by harvest activities. No road construction or timber harvest would occur in riparian areas, wetlands, or flood plains.

Range of Alternatives

In considering alternatives to the Proposed Action, the ID team focused on the Purpose and Need for the project, and the issues described in Chapter 1. Other factors considered included Forest management direction, Federal and State laws, regulations, and policies. In addition to the three alternatives analyzed in detail in Chapter 3, the ID team considered five alternatives that were not studied in detail in this document. These alternatives, dismissed for the reasons described below, contributed to the range of alternatives considered.

Alternatives Considered but Eliminated from Detailed Study in this FEIS

Timber Emphasis Alternative from 1989 EA
This alternative emphasized harvesting timber based on stand health priority. Although it was analyzed in the 1989 EA, this alternative was eliminated from detailed study in the 1998 EA and this FEIS because, without changes, it would not meet current management direction for PACFISH and sensitive species requirements. It would also not implement any water quality improvement projects to address the accelerated erosion and sediment delivery issue.

Economic Emphasis Alternative from 1989 EA
This alternative emphasized harvesting timber based on the short-term Present Net Value of the stands. Similar to the Timber Emphasis Alternative, this alternative would not meet current management direction for PACFISH and sensitive species requirements. It would also not implement any water quality improvement projects to address the accelerated erosion and sediment delivery issue.

Prescribed Fire
The use of prescribed fire as a means of managing vegetation instead of timber harvest was considered but not analyzed in detail because: fire alone would not meet Forest Plan direction for Management Area 11 that emphasizes timber production; it would not meet the purpose and need of this proposal; and it would be costly, if not physically impossible, to completely protect existing plantations and adjacent stands from fire.

Short-term Sediment Reduction
The ID team considered an alternative that would emphasize options to reduce short-term as well as long-term sediment production. These options included increasing road-related mitigation and obliteration, reducing the number of harvest units, yarding by helicopter rather than tractor or skyline systems, and changing silvicultural prescriptions. This alternative was eliminated from further study for the following reasons:

- All of these options were already considered and implemented to varying degrees in the action alternatives (see Alternative II and III descriptions in Chapter 2 of this FEIS).
- Sites with high sediment production and delivery potential have already been identified and would be treated under the action alternatives. Additional graveling, mitigation, or obliteration would only have minor benefits. These additional activities, however, would also produce short-term sediment impacts.
- Reducing harvest units, or changing to helicopter yarding in units that can be readily accessed and treated with less expensive systems, would make the timber sale less economical. This, in turn, would adversely affect the sale's ability to pay for identified water quality improvement projects. In other words, the less economical the sale becomes, the less able the project is to improve current high-sediment sites.
- Additional helicopter yarding would require additional helicopter landings. Additional landing construction would create additional short-term sediment impacts.

Little reduction in short-term sediment delivery would be realized from changing silvicultural prescriptions.

Restoration Projects
The ID team considered an alternative that would implement the watershed improvement projects only, without the associated timber harvest. This alternative would cost the Forest $240,100 for road betterment, including graveling, and $15,000 for road obliteration. This alternative was eliminated from further study because the $255,100 needed is not available in the Forest's budget, and because implementation of a timber sale project would cover the costs of the road betterment, and also accomplish the goals stated for vegetation in the Purpose and Need of this document.

Alternatives Considered in Detail

The ID team developed and analyzed in detail three alternatives, including the Proposed Action and a "No Action" alternative. In the following text and figures that describe the action alternatives, all numbers (miles of road improvements, treated acres, timber volumes, unit locations, etc.) are estimates based on the best available information. Minor changes reflecting site-specific field conditions could occur during implementation of an action alternative but would be within the scope and intent of this NEPA document.

Alternative I (No Action)

The No Action Alternative is required by the National Environmental Policy Act and serves as a baseline for analysis of effects (40CFR 1502.14(d)). Current management of the area would continue as directed in the Forest Plan, except that the proposed timber sale and its associated activities and mitigation measures would not be implemented. At this time this alternative would likely have little or no short-term impact to the environment; however, it would not meet the Forest Plan timber management direction for this area nor the Purpose and Need for this proposal. The No Action Alternative would not contribute to long-term improvement in water quality.

No scheduled timber management would be conducted at this time. However, if wildfire or major outbreaks of insects or disease affect the timber, then the Forest may plan, analyze, and implement appropriate salvage or other harvest treatments in the area.

This alternative would not create any project-caused fuels (slash), nor would it treat any natural fuel build-up in the area. Forest succession and fuel accumulation would continue. The future risk of wildfire would continue to increase without harvest and fuel treatments prescribed in the action alternatives.

This alternative would not construct, reconstruct, improve, obliterate, or close any roads. No timber-derived economic value would be generated from this alternative.

Alternative II (Proposed Action)

The ID team developed Alternative II (see Figure 2-1) to bring the 1989 and 1998 preferred alternative up to current management direction. This was done by incorporating INFISH direction, habitat requirements for sensitive species (mainly goshawk), snag and down woody requirements, additional hydrologic analysis to identify water quality improvement needs, and by applying Historic Range of Variability (HRV) concepts. Since issuing the September 1998 EA and Decision Notice, the Forest has adjusted the Patrick Butte Roadless Area boundary and modified two harvest unit boundaries to exclude Forest Trail #165 from the units in response to an appeal of the 1998 Decision.

Issues
This alternative addressed the major issues described in Chapter 1 in the following ways:

Issues 1 and 2 (water quality and soil) - The ID team incorporated road obliteration, graveling, and closures, the elimination of two units from the 1989 preferred alternative, and other watershed improvement projects that would improve water quality and reduce total soil resource commitment.

Issue 3 (goshawk habitat) - Five units from the 1989 preferred alternative were moved out of goshawk nesting and post-fledging habitat to a less restrictive goshawk foraging area.

Issue 4 (elk habitat) - The 1989 preferred alternative addressed this issue. However, additional road closures in the updated alternative would greatly improve the EHE value in IRA 365.

Issue 5 (vegetation, fire, and fuels) - The ID team incorporated HRV concepts and resource objectives other than timber into the silvicultural prescriptions, while striving to meet Forest Plan growth objectives. The team also considered VSS objectives for goshawk in determining the amount of area to treat.

No Forest Plan amendments would be required with this alternative. See Chapter 3 for more detailed information on how issues were addressed.

Roads
No new road construction would occur in this alternative. An estimated 16.6 miles of road would be improved (blading, shaping, and improving drainage to reduce accelerated erosion) to access harvest units. The proposed management of roads is shown in Figure 2-3. The miles affected are summarized below. These figures could change slightly when better field data is obtained. For road closures, the method of closure is shown in Figure 2-3.

- Roads to be closed (administrative use allowed) 13.8 miles
- Roads to be obliterated 3.9 miles
- Roads presently closed 10.9 miles
- Roads that would remain open (within the project area) 16.3 miles

Harvest Systems and Slash Disposal
Tractor logging is prescribed within units where slopes are less than 45 percent. All units would have designated skid trails with line pulling. When necessary to work off of designated skid trails, minimal

passes would be made over the same area. On slopes 35 percent to 45 percent, excavator piling off designated skid trails would be required.

Skyline logging is prescribed where slopes exceed 45 percent or where tractor logging is not feasible due to potential impacts. Slash would be managed by either broadcast burning, or by lop and scatter. Where broadcast burning is the method with an even-aged regeneration (EAR) prescription, clumping of retention trees would be emphasized. To help ensure retention trees are not lost during broadcast burning, some pull- back of slash from retention trees may be required.

Helicopter logging is prescribed where tractor or skyline logging is not feasible due to lack of road access. Slash would be managed in the same manner as for skyline logging, above.

Silvicultural Systems
The silvicultural prescriptions used in this alternative are (see Appendix E for unit-specific information):

- even-aged regeneration (EAR) 237 acres
- free selection (FS) 33 acres
- patch clearcut (PCC) 20 acres
  Total 290 acres

The overall purpose of the silvicultural prescriptions is to enhance the growth and health of timber stands in this area in a way that reflects historic norms. Each prescription is described below.

1. The **Even-aged Regeneration or EAR prescription** would regenerate mature, even-aged stands in areas of lethal or mixed severity fire regimes, using variable retention concepts (Franklin and others, 1997). Mainly large trees would be left either as dispersed individuals or aggregated clumps, or a combination of both. The main objectives for leaving these trees are: 1) to provide wildlife habitat after logging and before tree establishment; 2) to enhance stand structure; and 3) to help maintain forest connectivity across the landscape.

Once regenerated (mainly by planting), these stands would be composed of Douglas-fir, ponderosa pine, and western larch, with some grand fir and Engelmann spruce in the understory and an overstory of large ponderosa pine, Douglas-fir, and some grand fir and larch. The number of retention trees left would vary from 5 to 25 trees per acre and would be mainly large-diameter trees. The exact number of trees to leave, and whether retention trees would be clumped or dispersed, would be decided when the final silvicultural prescription is completed and would be based on the amount of grand fir in the stand, snag recruitment, visual concerns, and other factors.

2. The **Free Selection or FS prescription** would maintain or create a multi-layered structure -- three or more age classes within a stand. Normally applied in low severity fire regimes, it is applied here because a previous entry has created a multi-layered condition. This method would maintain a multi-layered structure by applying the appropriate silvicultural method to existing vegetative conditions. Trees would be selected for cutting based on the existing condition of individuals or groups of trees. Regeneration cuts and intermediate treatments would be applied where existing conditions warrant. Patches created would not exceed one acre. Where thinning or other silvicultural methods are necessary to treat existing stand conditions, normal stand densities would remain (80 to 120 square feet of basal area for thinning, 30 to 40 square feet of basal area for shelterwood). Strata designations do not normally change as a result of this prescription.

3. The **Patch Clearcut or PCC prescription** would start the regeneration process in a mature stand but in a manner that would not create any large openings. Approximately half of the stand would have 1 to 3 acre clearcut patches scattered throughout. The exact location of patches would be determined when the final silvicultural prescription is written.

Reforestation
An estimated 258 acres would require planting of tree seedlings to restock and ensure rapid growth of harvested areas (see Appendix E for reforestation acres by harvest unit). Ponderosa pine, Douglas-fir, and western larch would be planted to help restore seral species to the area. The number of trees per acre planted would be enough to ensure the fifth year stocking as defined in the Forest Plan for the mixed conifer working group (Forest Plan, IV-60).

Records of plantation survival in this area show that fifth year survival of trees planted in June of 1973 averaged 415 trees per acre, with a low of 290 and a high of 560 (11 units within Brown Creek sale, see project record). This stocking level meets Forest Plan guidelines (Forest Plan, IV-60).

Riparian Habitat Conservation Areas
Current management guidelines for activities in anadromous watersheds (PACFISH) call for the establishment of riparian habitat conservation areas (RHCAs), which include landslide-prone areas. The Payette National Forest has delineated landslide-prone areas within the project area. To map these areas, the Payette used three primary tools: a computer model developed by the Intermountain Research Station; the Forest's geographical information system digital elevation model; and the Forest landtype data bases. The identified landslide-prone areas are part of the designated RHCAs and are excluded from all management activities. Detailed maps of landslide-prone areas were used for project design and are found in the project record.

The following PACFISH buffers would be used to protect RHCAs.

- 300 feet either side of fish-bearing perennial streams.
- 150 feet either side of non-fish-bearing perennial streams.
- 100 feet either side of non-fish-bearing intermittent streams.
- 150 feet around ponds, lakes reservoirs, and wetlands greater than 1 acre in size.
- 100 feet around seeps, springs, bogs, wetlands, and lakes less than 1 acre in size, and around landslides and landslide-prone areas.

Knutson-Vandenburg (KV) Opportunities
The following opportunities would be eligible for Knutson-Vandenburg (KV) funds generated by the sale:

- 258 acres of tree planting, site preparation, and survival exams.
- 5 harvest units fenced for plantation protection.
- 3.9 miles of road obliteration.
- 8 earthen berms or other physical closures for roads closed to improve EHE.
- Noxious weed survey and treatment.
- Water development reconstruction.

Opportunities are prioritized based on need, with reforestation-related projects at the top of the list. If KV funds are not available for road obliteration, road closures, and noxious weed treatment, other funding sources will be used.

Alternative III

Alternative III (see Figure 2-2) addresses the roadless character and wilderness potential issue (#6) in Chapter 1 by not entering the Patrick Butte Roadless Area with timber harvest in Units 417, 410, 408, 430, 609, 911, and 913. In addition, unit 501 has been dropped from this alternative for economic reasons (it would have been the only remaining helicopter unit in the alternative). A total of 111 acres have been dropped from treatment in the eight units, 105 acres in the Patrick Butte Roadless Area, and 6 acres in the roaded portion. All other harvest units, roads, silvicultural prescriptions, logging systems, RHCAs, mitigation, monitoring, and KV opportunities (except tree planting, see Table E-4 in Appendix E) would remain the same as Alternative II. However, acres treated with timber harvest, slash disposal, and reforestation would all decrease due to the elimination of harvest units (see Table 2-3). Volume harvested and economic and socio-economic returns would also be reduced. No long-term direct, indirect, or cumulative effects would occur to the roadless area as a result of this alternative. The Forest Service has updated this alternative since the 1998 EA and Decision Notice to reflect changes to the roadless area boundary. There was a net increase in roadless acres both within the project area and the roadless area as a whole.

Elements Common to All Action Alternatives

The action alternatives have certain things in common. For instance, they both meet the Purpose and Need of this proposal and address major issues to various degrees. They both have the same project area boundary, and implementation of activities is scheduled to begin in 2001. They both comply with State and Federal laws and regulations. In addition, the action alternatives share the following elements.

Management Requirements and Mitigation Measures
Mitigation is defined as actions designed to reduce or prevent undesirable effects from proposed activities. The Payette National Forest uses two general types of mitigation: management requirements and mitigation measures.

Management Requirements - The management requirements listed in Table 2-1 of the Brown Creek FEIS by resource are to be implemented during or after the project in order to meet the stated objectives. These requirements represent standard operating procedure for the protection of Forest resources, and the requirements are generally addressed in timber sale layout or contract provisions. The source for the requirements is typically the Forest Plan, but can also be existing laws, regulations, guidelines or provisions developed by the Payette National Forest.

Mitigation Measures - The mitigation measures listed in Table 2-2 of the Brown Creek FEIS are practices that the ID team developed during this project analysis to address site-specific environmental concerns that were not sufficiently addressed by existing management requirements. Each measure includes the objective, the enforcement mechanism, the person responsible for enforcement, an effectiveness rating, and the basis for that rating.

Monitoring and Evaluation
Monitoring and evaluation are the control systems for implementation of the Forest Plan, including projects such as this. Monitoring collects data to show whether the project has produced the effects predicted in the scientific analysis presented in Chapter 3 of the Brown Creek FEIS. Evaluation reviews the monitoring results and determines what adjustments are needed. Monitoring and evaluation give the decision-maker and the public information on the progress and results of implementing the activities described in the

document. See Appendix C of the Brown Creek FEIS for the detailed Monitoring and Evaluation Plan for this project.

Comparison of Alternatives

This section compares the alternatives described in detail in this summary. Table S-2 compares activities and outputs of the alternatives, and Table S-3 compares the effects of the alternatives on the major issues described in Chapter 1 of the FEIS. See Chapters 1 and 3 for background on the issues. See Chapter 3 for a complete description of effects and the scientific basis for these results.

Table S-2. Comparison of Activities and Outputs by Alternative*

Activity or Output		Alternative I	Alternative II	Alternative III
Timber Harvest	Acres Treated	0	290	179
	Volume (MBF)	0	5,429	2,671
Harvest Systems (Acres)	Tractor Yarding	0	163	163
	Skyline Yarding	0	16	16
	Helicopter Yarding	0	111	0
Silvicultural Systems (Acres)	Even-aged Regeneration (EAR)	0	237	126
	Free Selection (FS)	0	33	33
	Patch Clearcut (PCC)	0	20	20
Slash Disposal (Acres)	Machine Pile and Burn	0	125	125
	Excavator Pile and Burn	0	66	54
	Broadcast Burn	0	90	0
	Lop and Scatter	0	9	0
Reforestation (Acres)	Planting	0	258	147
	Natural	0	7	7
Roads (Miles)	New Construction	0	0	0
	Improvements	0	16.6	16.6
	Obliteration	0	3.9	3.9
	Closures	0	13.8	13.8
	Open Roads After Sale	34	16.3	16.3
Other Disturbances (Acres)	Landings	0	6	5
	Aggregate Source	0	1	1
	Borrow Source	0	1	1
	Water Source	0	1	1
Economics (Dollars)	Present Net Value	-$336,714	-$309,819	-$198,398

*All numbers are estimates based on the best available information at this time.

Table S-3. Comparison of Environmental Effects to the Major Issues by Alternative

Issue 1. Erosion and Sediment Delivery

Indicator	Subwatershed - Year	Alternative I	Alternative II	Alternative III
Modeled Sediment as Percent Over Natural	Brown Creek – 2001	8.5	14.3	14.1
	Brown Creek – 2004	8.5	7.1	7.1
	Brown Creek – 2006	8.5	4.5	4.5
	Sixmile Creek – 2001	12.7	13.3	13.3
	Sixmile Creek – 2004	12.7	12.3	12.3
	Sixmile Creek – 2006	12.7	12.2	12.2
	Middle Little Salmon – 2001	75.9	90	90
	Middle Little Salmon – 2004	75.9	62.4	62.4
	Middle Little Salmon – 2006	75.9	56.7	56.7

Issue 2. Soil Productivity

Indicator	Alternative I	Alternative II	Alternative III
Total Soil Resource Commitment	2.5% of Project Area	2.3% of Project Area	2.3% of Project Area

Issue 3. Goshawk Habitat

Indicator	Alternative I	Alternative II	Alternative III
Goshawk Nesting, Post-Fledging, and Foraging Habitats	Meets habitat requirements	Meets habitat requirements	Meets habitat requirements

Issue 4. Elk Habitat

Indicator	IRA - Time Period	Alternative I	Alternative II	Alternative III
Elk Habitat Effectiveness Value Forest Plan Target Level = 30	IRA 365 - Current Condition	19	19	19
	IRA 365 - During Sale	19	19	19
	IRA 365 - After Sale	19	61	61
Elk Habitat Effectiveness Value Forest Plan Target Level = 85	IRA 362 - Current Condition	90	90	90
	IRA 362 - During Sale	90	90	90
	IRA 362 - After Sale	90	90	90

Issue 5. Vegetation, Fire and Fuels - Forest Structure

Indicator		Desired Condition	Alternative I	Alternative II	Alternative III
Percent of Project Area in:	Openings	10-20	4	10	8
	Young Forest	20-30	20	20	20
	Mid-aged Forest	40	43	41	40
	Old Forest	20	33	29	32

Issue 5. Vegetation, Fire and Fuels - Historic Norms

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Species Composition	0	290	179
Acres of Improved Structure	0	290	179
Acres of Improved Density	0	290	179
Acres of Reduced Insect and Disease Activity	0	290	179
Acres of Reduced Fuel Loading	0	290	179

Issue 5. Vegetation, Fire and Fuels - Stand Growth and Health

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Stand Growth and Health	0	290	179

Issue 6. Roadless Character and Wilderness Potential

Indicator	Alternative I	Alternative II	Alternative III
Acres Eligible for Future Wilderness Consideration in the Project Area	1,449	1,214	1,449
Acres Eligible for Future Wilderness Consideration in the Patrick Butte Roadless Area	80,644	80,409	80,644
Effects on Wilderness Attributes: Natural Appearance Natural Integrity Opportunity for Solitude Opportunity for Primitive Recreation Special Feature (salmon habitat)	No alternative would adversely affect the special feature of chinook salmon habitat in Hard Creek. Alternatives I and III would not affect any other wilderness attributes. Alternative II would adversely affect all other wilderness attributes by introducing harvest into an estimated 105 acres along the edge of the 80,644 acre Patrick Butte Roadless Area.		

Chapter 1

Purpose and Need

CHAPTER 1
PURPOSE AND NEED OF THE PROPOSED ACTION

Introduction

This Final Environmental Impact Statement (FEIS) analyzes and discloses the potential site-specific environmental effects of the Brown Creek Timber Sale on resources within and around the sale planning area on the New Meadows Ranger District of the Payette National Forest (see Figures S-1 and S-2 in the FEIS). This analysis is tiered to and supplements the analysis in the FEIS prepared for the Payette National Forest Land and Resource Management Plan (1988), hereafter referred to as the Forest Plan.

The Draft Environmental Impact Statement (DEIS) was a revision of the Brown Creek Timber Sale Environmental Assessment (EA) that the Payette National Forest released to the public in 1989 and re-released in updated form in 1998. Both EAs are herein incorporated by reference. An EA, Decision Notice (DN), and Finding of No Significant Impact (FONSI) for the Brown Creek Timber Sale were completed in September, 1989. Before the sale could be offered and sold, however, a series of events and changes occurred that caused the Forest to put the sale on hold until it could be reanalyzed by an interdisciplinary (ID) team. These changes included: identification of sensitive species by the Regional Forester; listing of the chinook salmon under the Endangered Species Act; adoption of ecosystem management principles by the Forest; large wildfires of 1994; incorporation into the Forest Plan of PACFISH guidelines (USDA/USDI, 1995 *Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California*); and new forest health concerns.

The Forest Service wanted to further analyze these changes and others that had occurred since 1989, and so convened a new ID team in 1996 to do just that. The ID team redesigned the 1989 preferred alternative to reflect changed conditions and management direction, and then analyzed the effects of this alternative and two other alternatives on pertinent resources in the area. The 1998 EA and Decision Notice (DN) was the result of that effort. The Forest Supervisor withdrew the 1998 decision as a result of new information on the roadless area and old growth that came to light through an appeal. The DEIS incorporated that new information.

Management Direction

Payette Forest Plan Direction

The Forest Plan, amended to include PACFISH direction, directs and integrates management of the entire Forest. This FEIS is tiered to the Forest Plan EIS, and Appendices. The activities in the Proposed Action have been designed to meet Forest Plan direction. The Brown Creek Timber Sale is listed in the Activity Schedule of the Forest Plan, Appendix A. The current Payette Forest timber sale 7-year action plan, an updated version of the Activity Schedule, has this sale offered in 2000.

Because no single acre on the Forest can serve all uses at once, the Forest Plan allocates different emphasis to different areas of the Forest, based on the land's capabilities. The Forest is divided into 26 Management Areas. The Brown Creek project area lies within Management Areas 10 and 11. Most of the project area is in Management Area 11 (Forest Plan, pages IV-203 to 210). The main uses in this area are timber and range management. The remaining area lies within Management Area 10 where the management emphasis is for dispersed recreation, grazing, wildlife, and watershed resources. Timber

management may occur in Management Area 10 using helicopter yarding systems (Forest Plan, page IV-251). Additional management direction can be found in the Forest-wide goals and objectives, desired future conditions, and standards and guidelines found on pages IV-1 to IV-132 of the Forest Plan.

The pertinent management direction is also summarized for each resource at the beginning of each resource section in Chapter 3 of this EIS.

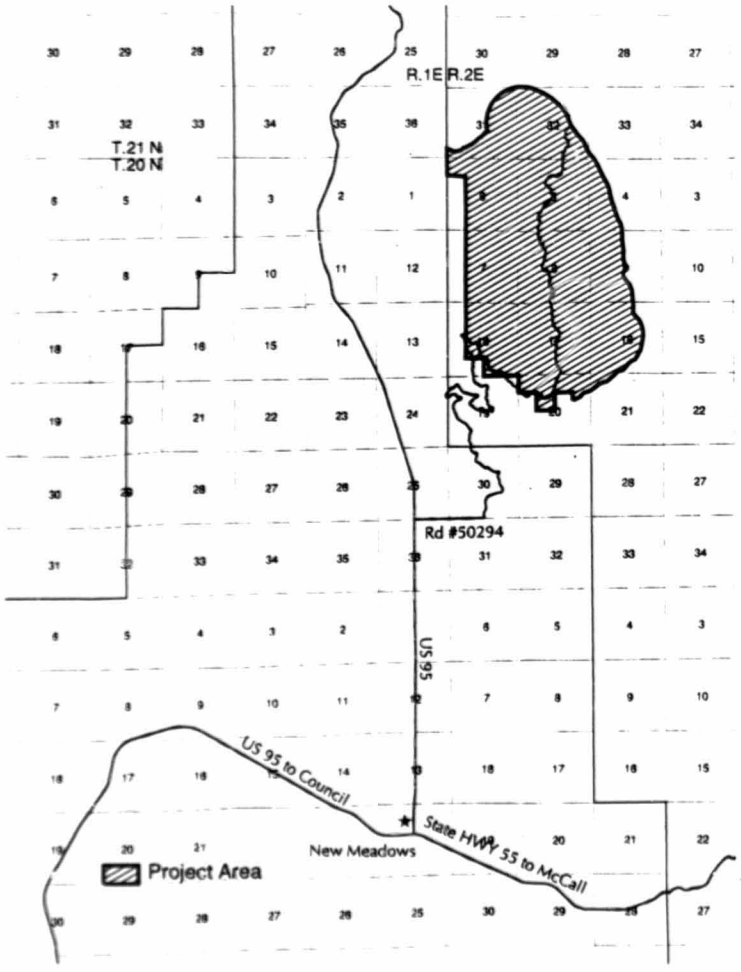
Agency Direction

On March 1, 1999, the Chief of the Forest Service directed the agency to adopt a temporary suspension of road construction and reconstruction in unroaded areas. This project conforms to the interim direction. A final policy for management of the Forest Service transportation system, including guidelines specific to unroaded areas, will be forthcoming sometime after this analysis is scheduled to be completed. In addition, the President has put forth an initiative dealing with management in roadless areas. A Draft EIS has been prepared by the Agency that will analyze if, how, or when entry into roadless areas will proceed in the future.

This project follows recent changes in management direction not covered in the Forest Plan. These changes include designation of sensitive species by the Regional Forester, the listing under the Endangered Species Act of bull trout, Chinook, and steelhead salmon; the listing of Canada lynx and northern Idaho ground squirrel; the listing of Ute ladies-tresses; the proposed listing of Spalding Catchfly; adoption of ecosystem management principles by the Payette National Forest; following the Management Recommendations for the Northern Goshawk; and incorporation of PACFISH guidelines to the Forest Plan

The Chief has also proposed a natural resource agenda to direct general resource management on agency lands. The natural resource agenda identifies four key areas of focus for Forest Service activities. These are watershed health and restoration, sustainable forest ecosystem management, forest roads, and recreation. The Proposed Action would promote achievement of this agenda by 1) reducing long-term sediment production; 2) protecting riparian areas and biodiversity; 3) attaining desired vegetative conditions and characteristics prior to fire exclusion (referred to as historic norms); 4) meeting habitat requirements for goshawk and other wildlife; 5) controlling noxious weeds; 6) reducing fuel buildups; 7) not building any new roads in either roaded or roadless areas; 8) restoring and maintaining selected existing roads by graveling, resurfacing and restricting access; and 9) obliterating and decommissioning substandard, unneeded roads.

Figure 1-1. The Brown Creek Timber Sale Project Area



The Proposed Action

The Proposed Action is a timber sale with connected project activities summarized below. The proposed Brown Creek sale project area is located on the east side of the New Meadows Ranger District, just south and east of Bally Mountain and just west of Granite Mountain in Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 20, and 21, T20N, R2E, Boise Meridian; and sections 31 and 32, T21N, R2E (see Figure 1-1). Access is from the south on Forest Service Road 50294.

The project area is an estimated 5,219 acres that lie within three subwatersheds: Brown Creek, Sixmile Creek, and Middle Little Salmon (see Figure 3-1). The Brown Creek subwatershed drains into Hard Creek, which is a priority watershed for protection of chinook salmon habitat. A small portion of the project area lies within the Patrick Butte Roadless Area (see Figures 3-6 and 3-7).

The Proposed Action would:

- Harvest an estimated 290 acres of timber using tractor, skyline, and helicopter logging systems (see Chapter 2, Alternative II description and Figure 2-1, and Appendix E, Tables E-1 and E-2).
- Improve 16.6 miles of road, both open and closed, for timber haul. Road improvements include graveling, blading, shaping, and installing rolling dips and relief culverts to improve drainage and reduce accelerated erosion. Close 13.8 miles of open road year-round to public motorized vehicles. Obliterate 3.9 miles of road. See Chapter 2, Figure 2-3 for road locations.
- Ensure desired species and stocking levels in regeneration cut stands by planting ponderosa pine, Douglas-fir, and western larch seedlings on an estimated 258 acres and naturally regenerating 7 acres.
- Treat harvested areas to reduce existing and activity fuels on an estimated 290 acres.
- Follow Forest Plan direction, federal and state laws and regulations, and mitigation listed in Chapter 2 of this FEIS to protect all resources in the area.

More detailed information on the Proposed Action is located in Chapter 2, *Alternatives Considered in Detail* section, under the description of Alternative II, and in Appendix E.

Purpose and Need

The **purpose** of the Proposed Action is to improve the existing condition of timber stands within the Brown Creek project area in accordance with the goals, objectives, and Desired Future Condition described in the Forest Plan. In particular, the Proposed Action addresses the Forest Plan goal to "manage suited timber acres to near site potential to produce commercial crops of trees suitable for timber production." By doing so, the Proposed Action would increase long-term health, diversity, and productivity of the timber resource, while providing wood products and reducing risks from insects, disease, and high-intensity fire.

The **need** for the Proposed Action is generated by the difference between existing timber stand conditions in the project area and the desired conditions for stands in the area as stated in three

categories: 1) Forest Structure, 2) Vegetative Characteristics and Conditions (Historic Norms), and 3) Growth and Vegetative Health.

Forest Structure
Forest Structure refers to the amount of open, young, mid-aged/mature, and old forest within the planning area. The long-term objective is to sustain a balance of forest structures across the planning area to provide for wildlife habitat, biodiversity, and wood products on a sustainable basis.

The desired Vegetative Structural Stages (VSS) were derived from *Management Recommendations for Northern Goshawk in the Southwestern United States* (Reynolds, et al. 1992) and adapted to the Payette Forest in July of 1996 (see July 1996 Policy letter in the project record).

The current condition compared with the desired condition helps determine the areas that are available for treatment. Figure 3-3 in Chapter 3 shows the strata locations that were used to determine VSS. The current and desired VSS are shown in Table 1-1, below. The desired VSS was determined by the Forest's wildlife biologists and issued as direction in a letter from the Forest Supervisor on July 15, 1996 (see project file).

Table 1-1. Existing and Desired Conditions of VSS in the Project Area

Vegetative Structure Stage	Existing Condition (%)	Desired Condition (%)
Open	4	10 to 20
Young Forest	20	20 to 30
Mid-aged to Mature Forest	43	40
Old Forest	33	20

Stand Characteristics and Conditions (Historic Norms)
Historic norms refers to stand characteristics and conditions (minus the extremes) that occurred prior to fire exclusion. Having an understanding of historic norms helps establish limits of acceptable change and provides a reference for a desired condition. Where the current condition differs from the desired condition, treatment should be proposed. Within the project area, only historic mixed severity and lethal fire regimes are present.

Existing Condition - In areas not previously treated by timber harvest (3,435 acres of strata 23, 24, 33, 34, and 35, or 71 percent of the suitable forested land), fire exclusion has allowed stand characteristics and conditions to reach the upper limits of historic norms, or in some cases, has allowed departures from historic norms. Stand structure, species composition, stand density, insects and disease, fuel loading, and potential fire severity are at the upper limits, with some departures from historic, particularly in the lodgepole pine cover type. That is, 100 years ago, if these conditions existed, a wildfire could have occurred at any time that would have replaced these older stands with younger ones.

In areas previously treated by timber harvest with a residual stand remaining (1,406 acres of strata 20, 21, 22, 31, and 32, or 29 percent of the suitable forested land), a greater amount of grand fir is regenerating in these partially cut stands than regenerated historically because of excessive shade. Though fuels have been treated in these former harvest units, excessive, fire-intolerant grand fir in the understory creates increased susceptibility to crown fires, thus potentially greater tree mortality during fire events.

Desired Condition - The desired condition is to replicate historic conditions as closely as possible. That is, replicate the changes in stand structure, stand density, species composition, and fuel loading that would normally have taken place when wildfire occurred on these areas prior to influence by humans, including Native Americans (Barrett, 1987). Departures from historic norms are anticipated and dealt with so that wildfire and insect and disease outbreaks are avoided. From a historic perspective, the entire planning area is within either mixed severity, or lethal fire regime (mesic and wet sites). The difference between the mixed and lethal fire regimes is patch size (mixed having smaller patches) and the amount and distribution of the remnant overstory after a fire event (mixed having more).

The desired condition is even-aged, storied or even-aged group stands that replicate historic mixed severity and lethal fire regimes. When a disturbance occurs, such as a timber sale, regeneration of early seral species such as western larch, Douglas-fir, lodgepole pine and ponderosa pine is encouraged. Stand densities are managed to avoid stagnation and excessive mortality (see stand growth and health, below), though under purely historic conditions excessive densities in these fire regimes did exist prior to a fire event, especially in the lethal fire regime (stands became dense, trees died, fuels built up, and a wildfire occurred). Insect and disease activity and impacts do not exceed a low to moderate level. Fuel loadings are generally less than 15 tons per acre.

Stand Growth and Health
The Forest Plan provides direction on growth of timber stands. Growth is a good indicator of vegetative health. If a stand is growing well, it is most likely healthy. Forest Plan growth assumptions are located in the project record.

Existing Condition - Strata 23, 24, 33, 34, and 35 have slow growth and high mortality related to age, density, and insects and disease. These are areas that have not been treated in the past. Forest inventory data summaries show current growth in strata 23 and 24 to be negative; that is, mortality exceeds growth. In strata 33, 34 and 35, growth is below site potential. Refer to the Payette Intensive Forest Inventory for these strata for current growth. (On file at the Supervisor's Office in McCall, ID).

Desired Condition - The desired condition is to have stands that are healthy and growing vigorously to near site potential (Forest Plan goal, page IV-50). Stands with negative growth where mortality exceeds growth (strata 23 and 24), due to old age and high densities, are converted to young vigorous stands of Douglas-fir, western larch, lodgepole pine, and ponderosa pine where stand densities are managed to maintain growth and health. Stands with growth below site potential (strata 34 and 35) are either thinned or converted to young stands that have the same species composition and density management as mentioned above. Stands with poor stocking and/or undesirable species composition (strata 21, 22, and 26) are treated and regenerated to young stands of the species composition mentioned above. Stocking levels of crop trees at the fifth year after regeneration would range from 250 to 335 trees per acre.

Decisions to Be Made

The responsible official for this proposal is the Forest Supervisor. Based on the analysis in this document, the responsible official will make the following decisions in the Record of Decision for this FEIS:

- Should the planning area be entered at this time for timber harvest and regeneration?
- If so, how many acres should be treated and regenerated?
- Where and how would timber be harvested?

- What roads are needed for this project and future management, and what roads can be closed or obliterated to improve watershed resource conditions and wildlife habitat in the area?
- What management requirements and mitigation measures are necessary to meet Forest Plan standards and guidelines for all resources?
- What monitoring requirements are appropriate to evaluate project implementation and effectiveness?

Scoping and Issues

For this document, an issue is a point of discussion, debate or dispute, usually about the environmental effects of a proposed action. Documentation of public involvement for this project is included in Chapter 4. The original public scoping for this project took place in 1988. Other opportunities for the public to become involved with this project included the 1988 EA, the 1997 predecisional EA, the 1998 EA/Decision, and the 1999 Notice of Intent (NOI) and Request for Issues. The ID team and responsible official considered all public comments in identifying issues and developing alternatives for this project. Summarized below are the major and other issues addressed by the ID team. Major issues are grouped by resource and described by three components. an issue statement, a brief background statement, and a list of indicators used to measure the effects of the proposed activities relative to the issue.

Major Issues

Major issues are those that require project-specific alternatives, mitigation measures, or design elements to address the effects that proposed activities may have upon them. The major issues briefly described below are discussed in detail in Chapter 3. Chapter 2 includes a summary comparison of how the various alternatives would affect indicators of the major issues.

Water Quality and Soil

Issue #1: Proposed project activities (timber harvest, road management) may accelerate erosion and sediment delivery in the project area.

Background: Accelerated erosion and sediment delivery are a primary source of water pollution in many Payette National Forest watersheds. Sediment can adversely affect cold water biota and other beneficial uses. Disturbances from road construction and reconstruction, and timber harvest can increase erosion and sediment delivery. Surface erosion is highest the first year after such disturbances, and rates decline rapidly as the exposed soil revegetates over time. Existing roads are the primary source of long-term management-related sediment. Mitigation such as graveling road surfaces, or the obliteration and revegetation of non-system roads, can reduce sediment over the long term.

Indicator:

- Estimated accelerated erosion and sediment delivery, modeled by BOISED and displayed as percent over natural.

Issue #2: Proposed project activities (timber harvest, road management) may affect long-term soil productivity within the project area.

Background: The long-term sustainability of forest ecosystems depends on the productivity and hydrologic functioning of soils. Ground-disturbing activities can directly affect soil properties that contribute to productivity. Soil disturbance displaces and mixes soil organic layers, and alters soil

properties, and reduces porosity. The biological productivity of soils depends on the amount of organic matter in the topsoil and on the forest floor. Detrimental soil disturbance can reduce the soil's ability to supply enough nutrients, moisture, and air to support soil microorganisms and vegetative growth. Certain uses, such as roads and landings, commit the soil resource to a nonproductive condition for an extended period of time (50 years or more).

Indicator:

- The percent of the project area in a condition of total soil resource commitment.
- The percent of detrimental soil disturbance in the project area.

Wildlife Habitat

Issue #3: Proposed project activities (timber harvest, road management) may affect the abundance, distribution, structure, and function of goshawk habitat and the habitat's ability to support goshawks in and near the project area.

Background: The northern goshawk is one of 16 wildlife species listed as sensitive for the Payette National Forest by the Regional Forester. A sensitive species is one that is susceptible or vulnerable to management activity impacts or habitat alteration. Maintaining an adequate amount and distribution of goshawk habitat is essential to the survival of the goshawk in the project area. A pair of goshawks has occupied a nesting area within the project area for the past several years.

Indicator:

- Degree to which the project meets the habitat requirements of goshawk within nesting, post-fledging and foraging areas.
- Old growth habitat in Circle 21.

Issue #4: Proposed project activities (timber harvest, road management) may affect the abundance, distribution, structure, and function of elk habitat and the habitat's ability to support elk in and near the project area.

Background: The Rocky Mountain Elk is a management indicator species for the Payette National Forest. Their population levels and habitat conditions indicate the potential impacts to habitat caused by human activities, including those associated with forest management. The elk is a general forest habitat species, representing species that are adapted to use a variety of structure and composition. The Forest Plan established elk habitat effectiveness (EHE) as an indicator of an area's value as elk habitat. The project area falls within two Issue Reporting Areas. The target EHE value for Issue Reporting Area (IRA) 365 is 30, and the target value for IRA 362 is 85.

Indicator:

- The EHE value compared to the Forest Plan's target EHE for the IRA.

Vegetation, Fire, and Fuels

Issue #5: Proposed project activities (timber harvest, slash treatment, reforestation) may affect the current forest structure, vegetative characteristics and conditions of stands, and the current growth and health of timber stands in the project area.

Background: The Forest Plan emphasizes management of the timber resource in this area to achieve growth objectives that are near site potential. Currently many stands are not achieving this. Also many

stands have departed, or soon will depart, from historic norms for vegetative characteristics, including species composition, stand density, fuel loading, insect and disease activity, and stand structure.

Indicators:

- Forest Structure - Percent of Vegetative Structural Stage (VSS) in each class.
- Vegetative Characteristic and Conditions (compared to Historic Norms) - Acres of improved characteristics and conditions for species composition, stand structure, stand density, insects and disease, and fuel loading.
- Growth and Vegetative Health - Acres of improved growth and health.

Roadless Character and Wilderness Potential

Issue #6: Proposed project activities (timber harvest, slash treatment, reforestation) may affect the roadless character and wilderness potential of a small portion of the Patrick Butte Roadless Area.

Background: The Proposed Action would harvest an estimated 105 acres on the edge of the 80,000-acre Patrick Butte Roadless Area. Because of the controversy associated with roadless entry of any kind, the team developed and analyzed a variation of Alternative II that did not enter the roadless area (see Chapter 2, Alternative III).

Indicators:

- Acres in the roadless and planning area eligible for future wilderness consideration.
- Effects on wilderness attributes, including natural appearance and integrity, opportunities for solitude and primitive recreation, and special features.

Other Issues

These issues did not require project-specific alternatives to address the effects that proposed activities may have upon them. The ID team considered these issues, but did not develop alternatives or analyze effects for them for the reasons given below.

Air Quality

Dust from logging traffic and smoke from slash burning would have minor, short-term (days) effects to air quality. Slash burning would only be conducted under specific prescribed weather and fuel conditions to minimize the amount, direction, and duration of particulate emissions. These burn prescriptions would comply with State of Idaho Air Quality Regulations and the Clean Air Act (see Chapter 2, *Management Requirements*).

Biodiversity

This project was designed to maintain biodiversity in the project area over the long term by improving the distribution of vegetative structural stages and reducing the risk of high severity fire (see *Vegetation, Fire, and Fuels* section, Chapter 3).

Although biodiversity is not a separate issue, discussion and analysis on key elements of biodiversity are woven into the resource sections in Chapter 3. Specifically, the *Water Quality and Soils* section covers water quality, stream channel conditions, riparian areas, coarse woody debris, and soil productivity; the *Wildlife Habitat* section addresses management indicator species, TES species, old growth, snags, and cover; and the *Vegetation, Fire, and Fuels* section discusses stand structure and density, and species composition, as well as natural processes like fire, succession, and insects and disease.

Economics and Socio-economics

Economics and socio-economics were not considered a major issue because the 1989 preferred alternative addressed them in its development. The current Proposed Action was developed from this alternative. Less economic efficient helicopter yarding systems were used in the Proposed Action only when no other viable system could be used given other resource concerns (water quality, wildlife habitat, roadless character). An economic and socio-economic analysis has been completed and is included in the project record. Table 1-2 summarizes the results.

The value for returns to the government are negative for several reasons. The loss to the government in Alternative I reflects the estimated cost of this environmental analysis and supporting overhead. The loss to the government in Alternatives II and III includes the cost of the analysis, supporting overhead, sale preparation, sale administration, and $192,500 to gravel and improve existing roads. All of the estimated costs are subtracted from the estimated returns realized from the sale of the timber. Forest Service timber support costs have increased due to additional analysis requirements, national and regional policy changes, appeals and lawsuits, and additional mitigation requirements. The value of the timber offered for sale has decreased due to an increase in offering of lower value small diameter whitewoods. The harvesting costs have also increased due to increased reliance on expensive helicopter yarding and reduction in the use of more economical ground based harvest systems due to the interim roads policy. Alternatives II and III would be below-cost sales, meaning it costs the Forest Service more to prepare the timber sales than the amount of money collected from the sale of the timber. The action alternatives are not deficit sales; however, the value of the timber sold would pay for all required reforestation and other sale contract related activities.

Table 1-2. Summary of Economic and Socio-economic Effects by Alternative

Indicator	Alternative I	Alternative II	Alternative III
Present Net Value	-$336,714	-$309,819	-$198,398
Jobs per year for 10 years	0	5.7	2.9
Income per year for 10 years	$0	$243,432	$121,804
Payments to Counties	$0	$173,819	$145,317

Fish Habitat

Effects to fish habitat and TES populations were analyzed in the Biological Assessment and Biological Evaluation that are part of this project and are incorporated here by reference (see project record, *Biological Assessment for Spring/Summer Chinook Salmon, Steelhead Trout, and Bull Trout*, and *Biological Evaluation for Westslope Cutthroat Trout and Spotted Frog*). Although no threatened or endangered fish species are known to occur in the Brown Creek project area, special emphasis was taken in designing the preferred alternative to reduce impacts to water quality and fish habitat because the project area lies in a priority watershed for anadromous fish. This emphasis is reflected in the following design features:

- No new road construction.
- Helicopter yarding to limit effects in the roadless portion of the project area.
- PACFISH RHCA buffers to protect all riparian and landslide-prone areas.
- Obliterating and returning to productivity 3.9 miles of existing road.
- Year-round closure to public motorized vehicles 13.8 miles of currently open road.

- Graveling 5.8 miles of existing road, plus all road stream crossings used for timber haul.
- Additional mitigation to control accelerated erosion and sediment delivery produced by the project.

These features would reduce overall sediment production and delivery in the project area over the long term (see *Water Quality and Soil* section, Chapter 3). For the reasons listed above, the ID team did not consider fish habitat to be a major issue, and therefore it was not analyzed in detail in Chapter 3 of this document.

On July 29, 1998 the National Marine Fisheries Service (NMFS) issued a letter of concurrence for the project, agreeing that the action is "not likely to adversely affect" listed Snake River spring/summer chinook salmon, Snake River steelhead or designated critical habitat. On September 22, 1998 the U.S. Fish and Wildlife Service issued a letter of concurrence for the project, agreeing that the action is "not likely to adversely affect" bull trout or designated critical habitat. These documents are available in the project record.

Cultural Resources

The Forest conducted cultural resource surveys in the project area, and the Forest archaeologist determined that no known sites would be affected by this project. This finding was sent to the State Historic Preservation Office (SHPO) for concurrence. SHPO concurred there would be no impacts to the cultural resources of the area provided that one site is avoided (see 11/14/89 concurrence form in project record). This site would be avoided, as it is not in or near any road or harvest unit. If any other sites are discovered during the preparation or operation of this sale, work would stop until a Forest archaeologist could assess the situation and recommend appropriate actions (Chapter 2, *Management Requirements*).

Noxious Weeds

Known noxious weed infestations occur within the project area. The acres and levels of these infestations have not been inventoried to date. Overall, the action alternatives would not have much effect on noxious weeds. Although increased traffic during the sale would pose a risk of introducing or spreading noxious weed species, this effect would be offset by the decrease in long-term access resulting from road closures. Surveying for and treating noxious weeds in the sale area is a management requirement for this project (see Chapter 2, *Management Requirements*). The timber sale may also generate funds to do some noxious weed eradication (see Chapter 2, Alternative II, *KV Opportunities*). A variety of methods may be used for eradication, as long as they meet current Forest direction and constraints.

Range

The proposed sale activities would have no known adverse effects on rangelands, range permittees, permits, or allotment management. There would be some short-term effects to the livestock permittee to ensure plantations are protected, but this is a standard operating procedure. Rangeland conditions are expected to improve over the long term as plantations created by the action alternatives are opened for grazing.

Recreation and Visual Quality

Recreation and Visual Quality were not considered major issues for this project for the following reasons:

- Little recreation use occurs within the project area except during hunting season.

- The Recreation Opportunity Spectrum (ROS) setting is mainly Roaded Modified.
- Two trails bisect the project area, but use is low.

One of these trails, the Bally Mountain trail, #166, would bisect a cutting unit in the Preferred Alternative. This trail would be protected as described under Chapter 2, *Management Requirements*. Portions of units from the Selected Alternative in the September 1998 Decision were dropped to protect the Granite Mountain trail, #165. The visual quality objectives (VQO) for this area would be met with this proposal. Most of the project area is in a modification VQO (see 1989 EA, page 12, and the project record).

Roads and Access

Access was considered a minor concern because, even with the road closures proposed, sufficient open roads would remain to provide adequate access to that portion of the project area that is currently roaded. See Chapter 2, Figure 2-3, for a map of open and closed roads. Road closures would be done for two main reasons:

1 – To reduce erosion and sedimentation in order to improve fish habitat; and

2 – To improve elk habitat effectiveness by reducing elk vulnerability.

These roads could still be used for administrative purposes. Roads that are no longer needed to administer Forest Service System lands would be obliterated. Both action alternatives propose obliterating nearly 4 miles of road.

Threatened, Endangered, and Sensitive Plant Species

The Forest conducted botanical surveys in the planning area and found no habitat for Forest sensitive plants or the threatened species, Ute ladies'-tresses. The Forest botanist completed a Biological Assessment (BA) and Biological Evaluation (BE) that determined this project is not likely to adversely affect Ute ladies'-tresses or impact any sensitive plants species. The U.S. Fish and Wildlife Service concurred with the BA determination in a letter dated 09/22/98. The BA, BE, and concurrence letter are in the project record.

In December 1999, Spalding catchfly, a grassland species, was proposed as threatened. No known populations are known to occur within the project area. Currently, the Forest Botanist is developing a model of potential habitat for Spalding catchfly based on Section 7 guidelines of the Endangered Species Act. If potential habitat occurs within the planning area, additional surveys will be conducted to ensure that no TES species are impacted.

Wetlands and Flood Plains

PACFISH buffers would effectively protect wetlands and flood plains from disturbance by harvest activities. No new road construction or timber harvest would occur in riparian areas, wetlands, or flood plains.

Permits and Licenses

Except for a gravel pit and road maintenance and reconstruction, all proposed activities are on National Forest System lands. The Forest Service would follow standard land survey procedures to ensure adjacent non-federal lands are not encroached upon by unauthorized Federal activities. Existing

permitted uses of National Forest System lands, including a Special Use Permit for an irrigation ditch, would be protected during project implementation. The Forest Service can implement the project through a standard FS timber sale contract with project-specific provisions. Boise Cascade Corporation and the Forest Service would also implement the Browns Creek Cost Share Supplement No. 4, sharing in the costs for reconstructing jointly-used roads and developing a gravel pit on land owned by Boise Cascade. Through the cost share supplement, both parties have obtained required pit development permits from Adams County and the Idaho Department of Lands. In addition, a Pit Lease Agreement between Boise Cascade and the Forest Service would be implemented with the timber sale contract for obtaining gravel for non-cost share roads within the project area. Any work involving activities within a stream channel with live water, such as culvert installation as part of road improvements, would require a stream alteration permit (404 Permit) from the Idaho Department of Water Resources.

Chapter 2

Alternatives Considered

ALTERNATIVES

Introduction

This chapter describes the alternatives considered for the proposed project and summarizes the predicted effects of the alternatives on the major issues presented in Chapter 1. Chapter 3 discusses these effects in detail. The sections of this chapter are:

- **Range of Alternatives** - briefly discusses the range of alternatives considered in the project analysis.
- **Alternatives Considered but Eliminated from Study** - discusses alternatives that were not carried forward in this analysis, and provides rationale for not studying them in detail.
- **Alternatives Considered in Detail** - describes the alternatives that the ID Team analyzed in depth, including the no action alternative, and the Proposed Action.
- **Management Requirements and Mitigation Measures** - lists and describes management requirements and mitigation measures that would be implemented under the action alternatives.
- **Monitoring and Evaluation** - briefly describes monitoring items that would be implemented under the action alternatives.
- **Comparison of Alternatives** - summarizes and compares the activity outputs and environmental effects of the alternatives in a table format.

Range of Alternatives

In considering alternatives to the Proposed Action, the ID team focused on the Purpose and Need for the project, and the issues described in Chapter 1. Other factors considered included Forest management direction, economic efficiency, federal and state laws, regulations, and policies.

In addition to the three alternatives analyzed in detail in Chapter 3, the ID team considered five alternatives that were not studied in detail in this document. These alternatives, dismissed for the reasons described below, contributed to the range of alternatives considered.

Alternatives Considered but Eliminated from Detailed Study in This FEIS

Timber Emphasis Alternative from 1989 EA

This alternative emphasized harvesting timber based on stand health priority. Although it was analyzed in the 1989 EA, this alternative was eliminated from detailed study in the 1998 EA and this FEIS because, without changes, it would not meet current management direction for PACFISH and sensitive species requirements. It would also not implement any water quality improvement projects to address the accelerated erosion and sediment delivery issue (see Chapter 1, Major Issues).

Economic Emphasis Alternative from 1989 EA

This alternative emphasized harvesting timber based on the short-term Present Net Value of the stands. Similar to the Timber Emphasis Alternative, this alternative would not meet current management direction for PACFISH and sensitive species requirements. It would also not implement any water quality improvement projects to address the accelerated erosion and sediment delivery issue.

Prescribed Fire

The use of prescribed fire as a means of managing vegetation instead of timber harvest was considered but not analyzed in detail because: fire alone would not meet Forest Plan direction for Management Area 11 that emphasizes timber production; it would not meet the purpose and need of this proposal; and it would be costly, if not physically impossible, to completely protect existing plantations and adjacent stands from fire.

Short-term Sediment Reduction

The ID team considered an alternative that would emphasize options to reduce short-term as well as long-term sediment production. These options included increasing road-related mitigation and obliteration, reducing the number of harvest units, yarding by helicopter rather than tractor or skyline systems, and changing silvicultural prescriptions. This alternative was eliminated from further study for the following reasons:

- All of these options were already considered and implemented to varying degrees in the action alternatives (see Alternative II and III descriptions in this chapter).
- Sites with high sediment production and delivery potential have already been identified and would be treated under the action alternatives. Additional graveling, mitigation, or obliteration would only have minor benefits. These additional activities, however, would also produce short-term sediment impacts.
- Reducing harvest units, or changing to helicopter yarding in units that can be readily accessed and treated with less expensive systems, would make the timber sale less economical. This, in turn, would adversely affect the sale's ability to pay for identified water quality improvement projects. In other words, the less economical the sale becomes, the less able the project is to improve current high-sediment sites.
- Additional helicopter yarding would require additional helicopter landings. Any landing construction would create short-term sediment impacts.
- Little reduction in short-term sediment delivery would be realized from changing silvicultural prescriptions.
- It would minimally meet the purpose and need for the project.

Restoration Projects
The ID team considered an alternative that would implement the watershed improvement projects only, without the associated timber harvest. This alternative would cost the Forest $240,100 for road betterment, including graveling, and $15,000 for road obliteration. This alternative was eliminated from further study because the $255,100 needed is not available in the Forest's budget, and because implementation of a timber sale project would cover the costs of the road betterment, and also accomplish the goals stated in the Purpose and Need of this document.

Alternatives Considered in Detail

The ID team developed and analyzed in detail three alternatives, including the Proposed Action and a "No Action" alternative. In the following text and figures that describe the action alternatives, all numbers (miles of road improvements, treated acres, timber volumes, unit locations, etc.) are estimates based on the best available information. Minor changes reflecting site-specific field conditions could occur during implementation of an action alternative but would be within the scope and intent of this NEPA document.

Alternative I (No Action)

The No Action alternative is required by the National Environmental Policy Act and serves as a baseline for analysis of effects (40CFR 1502.14(d)). Current management of the area would continue as directed in the Forest Plan, except that the proposed timber sale and its associated activities and mitigation measures would not be implemented. This alternative would likely have little or no short-term impact to the environment; however, it would not meet the Forest Plan timber management direction for this area nor the Purpose and Need for this proposal. Alternative I would not contribute to long-term improvement in water quality.

No scheduled timber management would be conducted at this time. However, if wildfire or major outbreaks of insects or disease affect the timber, then the Forest Service may plan, analyze, and implement appropriate salvage or other harvest treatments in the area.

This alternative would not create any project-caused fuels (slash), nor would it treat any natural fuel buildup in the area. Forest succession and fuel accumulation would continue. The future risk of wildfire would continue to increase without harvest and fuel treatments prescribed in the action alternatives.

This alternative would not construct, reconstruct, improve, obliterate, or close any roads. No timber-derived economic value would be generated from this alternative.

Alternative II (Proposed Action)

The ID team developed Alternative II (see Figure 2-1) to bring the 1989 and 1998 preferred alternative up to current management direction. This was done by incorporating PACFISH direction, habitat requirements for sensitive species (mainly goshawk), snag and down woody requirements, additional hydrologic analysis to identify water quality improvement needs, and by applying Historic Range of Variability (HRV) concepts. Since issuing the September 1998 EA and Decision Notice, the Forest

Service has adjusted the Patrick Butte Roadless Area boundary and modified two harvest unit boundaries to exclude Forest Trail #165 in response to an appeal of the 1998 Decision.

Issues
This alternative addressed the major issues described in Chapter 1 in the following ways:

- **Issues 1 and 2 (water quality and soils)** - The ID team incorporated road obliteration, graveling, and closures, the elimination of two units, and other watershed improvement projects that would improve water quality and reduce total soil resource commitment.
- **Issue 3 (goshawk habitat)** - Five units were moved out of goshawk nesting and post-fledging habitat to a less restrictive goshawk foraging area.
- **Issue 4 (elk habitat)** - The 1989 preferred alternative addressed this issue. However, additional road closures in the updated alternative would greatly improve the EHE value in IRA 365.
- **Issue 5 (vegetation, fire, and fuels)** - The ID team incorporated HRV (Historic Range of Variability) concepts and resource objectives other than timber into the silvicultural prescriptions, while striving to meet Forest Plan growth objectives. The team also considered VSS (Vegetative Structural Stages) objectives for goshawk in determining the amount of area to treat (as described in the Forest Policy letter dated July 15, 1996).

No Forest Plan amendments would be required with this alternative. See Chapter 3 for more detailed information on how issues were addressed.

Roads
No new road construction would occur in this alternative. An estimated 16.6 miles of road would be improved (blading, shaping, and improving drainage to reduce accelerated erosion) to access harvest units.
The proposed management of roads is shown in Figure 2-3. The miles affected are summarized below. These figures could change slightly when better field data is obtained. For road closures, the method of closure is shown in Figure 2-3.

- Roads to be closed (administrative use allowed) 13.8 miles
- Roads to be obliterated 3.9 miles
- Roads presently closed 10.9 miles
- Roads that would remain open (within the project area) 16.3 miles

An aggregate source, a borrow source, and a water source would be needed to support the road improvement activities. The aggregate source would be located on Boise Cascade Corporation land in the SW ¼, NW ¼ of Section 20, T20N, and R2E. The borrow source would be located on National Forest System land in the NE ¼, SW ¼ of Section 6, T20N, R2E. There are two potential water sources: one located on private ground in the NE ¼, SE ¼ of Section 30, T20N, R2E; and one located on National Forest System land in the SW ¼, NE ¼ of Section 17, T20N, R2E.

Figure 2-1. Harvest Units in Alternative II

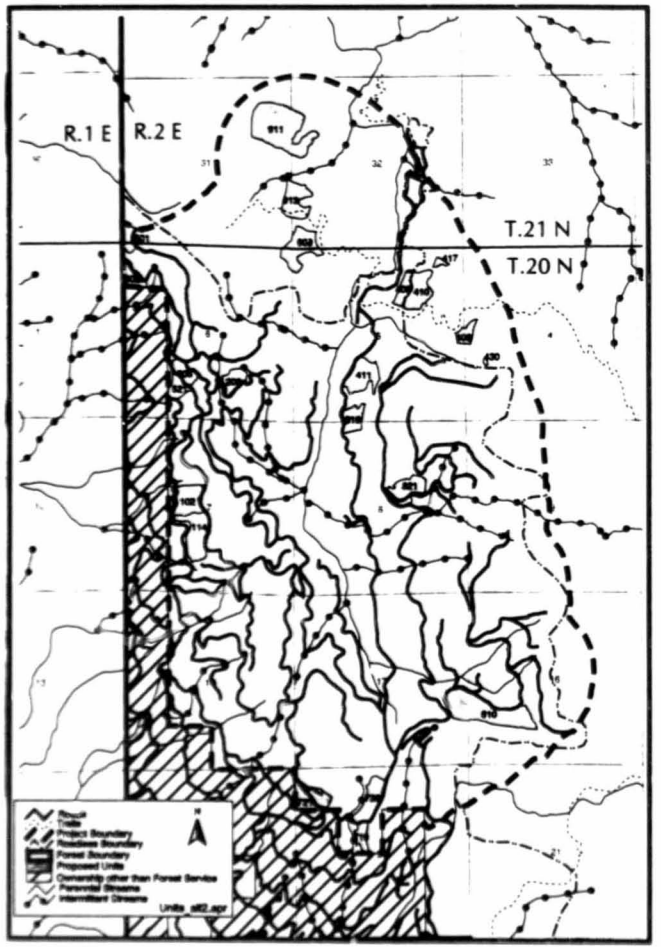


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Figure 2-2. Harvest Units in Alternative III

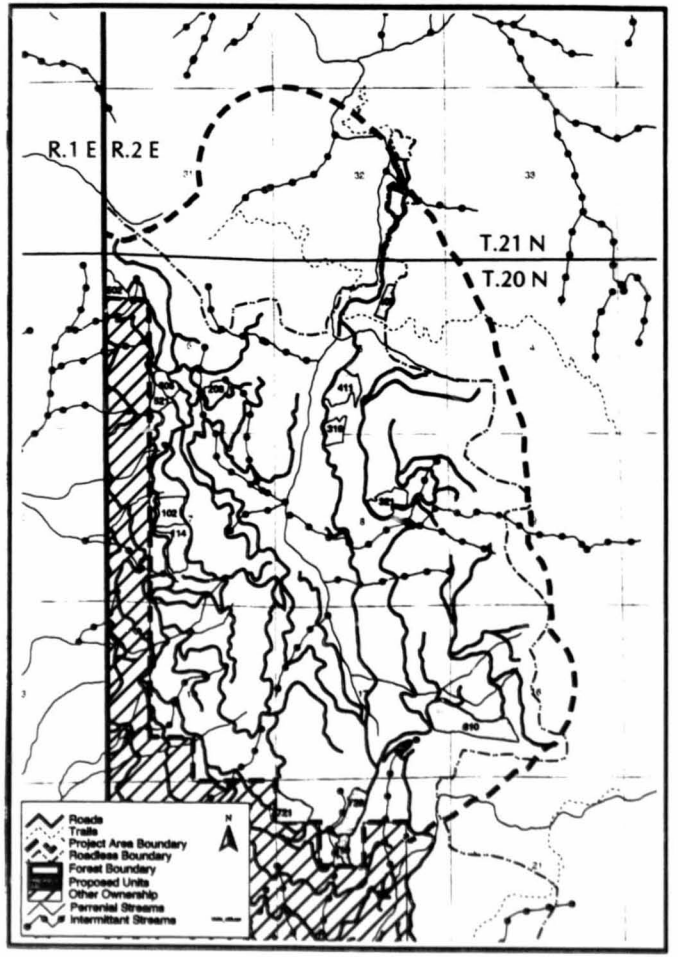

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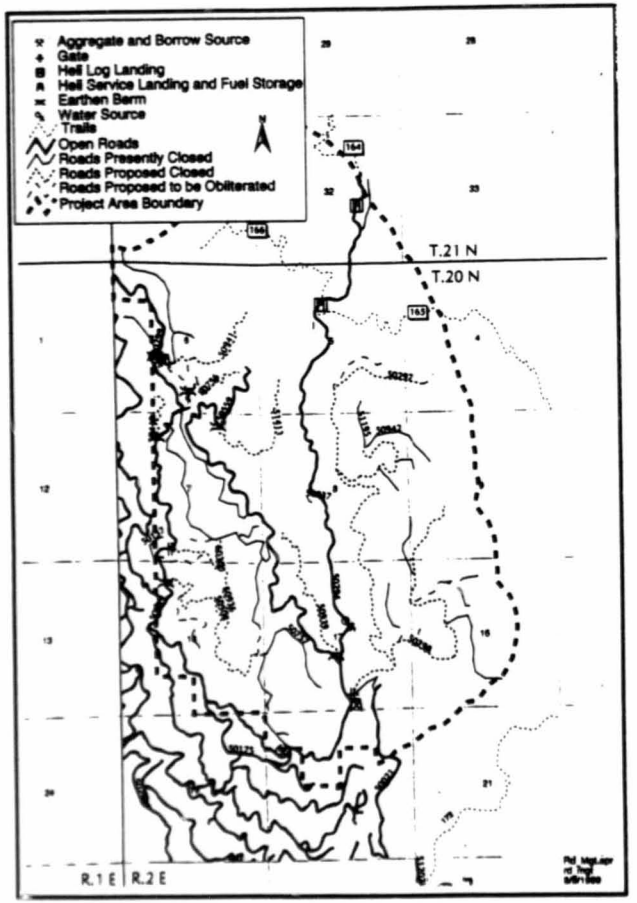
Figure 2-3. Road Management in Alternatives II and III



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Harvest Systems and Slash Disposal

Tractor logging is prescribed within units where slopes are less than 45 percent. All units would have designated skid trails with line pulling. When necessary to work off of designated skid trails, minimal passes would be made over the same area. On slopes 35 percent to 45 percent, excavator piling off designated skid trails would be required.

Skyline logging is prescribed where slopes exceed 45 percent or where tractor logging is not feasible due to potential impacts. Slash would be managed by either broadcast burning or by lop and scatter. Where broadcast burning is the method with an even-aged regeneration (EAR) prescription, clumping of retention trees would be emphasized. To help ensure retention trees are not lost during broadcast burning, some pull-back of slash from retention trees may be required.

Helicopter logging is prescribed where tractor or skyline logging is not feasible due to lack of road access. Slash would be managed in the same manner as for skyline logging, above.

Silvicultural Systems

The silvicultural prescriptions used in this alternative are (see Appendix E for unit-specific information):

• even-aged regeneration (EAR)	237 acres
• free selection (FS)	33 acres
• patch clearcut (PCC)	20 acres
Total	290 acres

The overall purpose of the silvicultural prescriptions is to enhance the growth and health of timber stands in this area in a way that reflects historic norms. Each prescription is described below.

The **Even-Aged Regeneration or EAR prescription** would regenerate mature, even-aged stands in areas of lethal or mixed severity fire regimes, using variable retention concepts (Franklin and others, 1997). Mainly large trees would be left either as dispersed individuals or aggregated clumps, or a combination of both. The main objectives for leaving these trees are: 1) to provide wildlife habitat after logging and before tree establishment; 2) to enhance stand structure; and 3) to help maintain forest connectivity across the landscape.

Once regenerated (mainly by planting), these stands would be composed of Douglas-fir, ponderosa pine, and western larch, with some grand fir and Engelmann spruce in the understory, and an overstory of large ponderosa pine, Douglas-fir, and some grand fir and larch. The number of retention trees left would vary from 5 to 25 trees per acre and would be mainly large-diameter trees. The exact number of trees to leave, and whether retention trees would be clumped or dispersed, would be decided when the final silvicultural prescription is completed and would be based on the amount of grand fir in the stand, snag recruitment, visual concerns and other factors.

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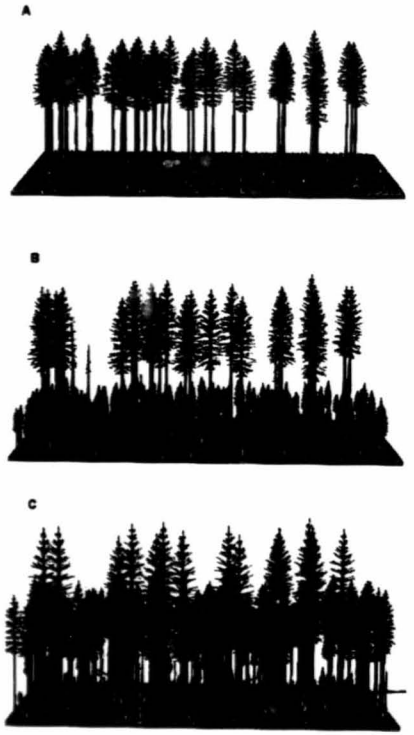

Projected appearance of the EAR prescription at (A) 1 year; (B) 30 years; and (C) 75 years after harvest.

The **Free Selection or FS prescription** would maintain or create a multi-layered structure -- three or more age classes within a stand. Normally applied in low severity fire regimes, this prescription is applied here because a previous entry has created a multi-layered condition. This method would maintain a multi-layered structure by applying the appropriate silvicultural method to existing vegetative conditions. Trees would be selected for cutting based on the existing condition of individual or groups of trees.

Regeneration cuts and intermediate treatments would be applied where existing conditions warrant. Patches created would not exceed one acre. Where thinning or other silvicultural methods are necessary to treat existing stand conditions, normal stand densities would remain (80 to 120 square feet of basal area for thinning, 30 to 40 square feet of basal area for shelterwood). Strata designations do not normally change as a result of this prescription.

The **Patch Clearcut or PCC prescription** would start the regeneration process in a mature stand, but in a manner that would not create any large openings. Approximately half of the stand would have 1 to 3 acre clearcut patches scattered throughout. The exact location of patches would be determined when the final silvicultural prescription is written.

Reforestation

An estimated 258 acres would require the planting of tree seedlings to restock and ensure rapid growth of harvested areas and 7 acres of natural regeneration would occur where the residual trees are left to provide seed to establish a new stand of trees (see Appendix E for reforestation acres by harvest unit). Ponderosa pine, Douglas-fir, and western larch would be planted to help restore seral species to the area. The number of trees per acre planted would be enough to ensure the fifth-year stocking as defined in the Forest Plan for the mixed conifer working group (Forest Plan, IV-60).

Records of plantation survival in this area show that fifth-year survival of trees planted in June of 1973 averaged 415 trees per acre, with a low of 290 and a high of 560 (11 units within Brown Creek sale, see project record). This stocking level meets Forest Plan guidelines (Forest Plan, IV-60).

Riparian Habitat Conservation Areas

Current management guidelines for activities in anadromous watersheds (PACFISH) call for the establishment of riparian habitat conservation areas (RHCAs), which includes landslide-prone areas. The Payette National Forest has delineated landslide-prone areas within the project area. To map these areas, the Payette used three primary tools: a computer model developed by the Intermountain Research Station; the Forest's geographical information system digital elevation model; and the Forest landtype data bases. The identified landslide-prone areas are part of the designated RHCAs and are excluded from all management activities. Detailed maps of landslide-prone areas were used for project design and are found in the project record.

The following PACFISH buffers would be used to protect RHCAs.

- 300 feet either side of fish-bearing perennial streams.
- 150 feet either side of non-fish-bearing perennial streams.
- 100 feet either side of non-fish-bearing intermittent streams.
- 150 feet around ponds, lakes reservoirs, and wetlands greater than 1 acre in size.
- 100 feet around seeps, springs, bogs, wetlands, and lakes less than 1 acre in size, and around landslides and landslide-prone areas.

Knutson-Vandenburg (KV) Opportunities

The following opportunities would be eligible for Knutson-Vandenburg (KV) funds generated by the sale:

- 258 acres of tree planting, site preparation, and survival exams.
- 5 harvest units fenced for plantation protection.

- 3.9 miles of road obliteration.
- 8 earthen berms or other physical closures for roads closed to improve EHE.
- Noxious weed survey and treatment.
- Water development reconstruction.

Opportunities are prioritized based on need, with reforestation-related projects at the top of the list. If KV funds are not available for road obliteration, road closures, and noxious weed treatment, other funding sources would be used.

Alternative III

Alternative III (see Figure 2-2) addresses the roadless character and wilderness potential issue (#6) in Chapter 1 by not entering the Patrick Butte Roadless Area with timber harvest in Units 417, 410, 408, 430, 609, 911, and 913 (a total of 105 acres). In addition, unit 501 (6 acres) has been dropped from this alternative for economic reasons (it would have been the only remaining helicopter unit in the alternative). A total of 111 acres has been dropped from treatment in the eight units, 105 acres in the Patrick Butte Roadless Area, and 6 acres in the roaded portion. All other harvest units, roads, silvicultural prescriptions, logging systems, RHCAs, mitigation, monitoring, and KV opportunities (except tree planting - see Table E-4 in Appendix E) would remain the same as Alternative II. However, acres treated with timber harvest, slash disposal, and reforestation would all decrease due to the elimination of the above units (see Table 2-3). Volume harvested would also be reduced. No long-term direct, indirect, or cumulative effects would occur to the roadless area as a result of this alternative. The Forest Service has updated this alternative since the 1998 EA and Decision Notice to reflect closer inspection and changes to the roadless area boundary. The net result was an increase in roadless acres both within the project area and the roadless area as a whole.

Management Requirements and Mitigation Measures

Mitigation is defined as actions designed to reduce or prevent undesirable effects from proposed activities. Mitigation can include avoiding the effect, minimizing the effect by limiting the action, rectifying the effect, reducing the effect through maintenance, or compensating for the effect. The mitigation listed here is designed to reduce or prevent adverse effects resulting from implementation of the action alternatives.

The Payette National Forest uses two general types of mitigation: management requirements and mitigation measures.

Management Requirements

The management requirements listed in Table 2-1 by resource are to be implemented during or after the project in order to meet the stated objectives. These requirements represent standard operating procedures for the protection of Forest resources. The source for the requirements is generally the Forest Plan, but can also be laws, regulations, guidelines or provisions developed by the Forest Service or the Payette National Forest.

Table 2-1. Management Requirements

Management Requirement	Objective	Source
Water Quality and Soil		
Apply Best Management Practices and Forest Soil and Water Conservation Practices to all ground-disturbing activities. See Table D-1, Appendix D.	Reduce or minimize effects of management activities on soil and water resources.	Forest Plan, IV-71; FS Handbook 2509.22; Soil and Water Conservation Practices Handbook
Maintain a minimum of 80 percent of an activity area in a non-detrimentally disturbed condition.	Protect or maintain the quality of soil properties that affect soil productivity.	Forest Plan, IV-73
Retain at least 15 tons of evenly distributed coarse woody debris (after slash disposal) per acre in harvest units where available. Retain about half the tonnage in size classes greater than 15 inches in diameter.	Provide organic matter for nutrient cycling to help maintain long-term soil productivity and structural diversity.	Forest Plan, IV-7; Snag and Coarse Woody Debris Guidelines, 1995.
Total soil resource commitment will not exceed 5 percent of an activity area.	Limit the extent of soil committed to non-productive land uses, such as roads and landings, to the minimum necessary for Forest management.	Forest Plan, IV-73
Conduct field verification on harvest units not previously inventoried to delineate wetlands and perennial, intermittent, and ephemeral stream channels prior to/during sale layout.	Ensure protection of riparian areas and wetlands.	Forest Plan, IV-93 to IV-95
Fish Habitat		
Implement PACFISH standards and guidelines for all management activities applicable to the project area, including timber harvest, road management, and fire and fuels management. Prohibit harvest in stream corridor and landslide-prone RHCAs without a watershed analysis.	Protect habitat for anadromous fish.	Forest Plan as amended by PACFISH (see pages C-9 through C-18, PACFISH EA).
Wildlife Habitat		
Report immediately to Contracting Officer, Sale Administrator, District Ranger, and Forest Biologist any threatened or endangered wildlife species in the project area during management activities.	Prevent disturbance to threatened or endangered wildlife species.	Endangered Species Act, Forest Plan, IV-20
Protect elk during calving. This may require periodic management activity restrictions between May 1 and July 15 in active calving areas.	Prevent disturbance to elk during calving period.	Forest Plan, IV-30
Protect elk wallows by providing thermal and hiding cover for two sight distances around the	Protect wallows and prevent disturbance to elk.	Forest Plan, IV-30

Management Requirement	Objective	Source
wallow, and by excluding equipment from the wallow.		
Incorporate the Payette NF Snag and Coarse Woody Debris Guidelines to maintain levels of snags and down logs at densities and size classes appropriate for the forest strata in the harvest unit.	Provide suitable habitat for primary and secondary cavity nesting species, as well as a wide variety of other species that use snags and down logs for habitat.	Forest Plan, IV-29, PNF Snag and Coarse Woody Debris Guidelines (Evans and Martens 1995)
Provide big game hiding or thermal cover around 50 percent of the perimeter of meadows greater than 5 acres. Provide cover at least two sight distances wide and containing a 10 acre stand. Maintain a minimum stand size between openings of 10 acres.	Provide usable elk cover habitat.	Forest Plan, IV-30
Limit newly created forage areas to 40 acres in size.	Provide adequate security for big game following timber harvest so that forage within harvest units can be fully utilized.	Forest Plan, IV-30
Retain hiding cover greater than three sight distances wide where cover presently exists along key travel routes identified by the ID team.	Provide adequate security for big game following timber harvest; sustain or improve population size to meet Forest Plan habitat objectives.	Forest Plan, IV-30
Provide for northern goshawk habitat throughout the watershed.	Maintain or improve goshawk habitat on the Forest	Memo to Rangers, July 15, 1996; USDA 1992
Keep all harvest-created openings smaller than 40 acres. Keep average size of created openings smaller than 30 acres.	Reduce impacts to wildlife habitat, visual quality, and other resources.	Forest Plan, IV-58, IV-30; Forest Service Region 4 direction
Recreation and Visual Quality		
Remove slash and repair any damage to Trail 166. Minimize skidding across the trail. Return trail to original location if necessary.	Maintain the integrity of the Forest trail system within the project area.	Forest Plan, Appendix B
Roads and Access Management		
Post signs on main travel routes advising the public of increased logging traffic.	Public safety and information	Forest Plan, IV-113, IV-118
Cultural Resources		
Avoid all known or discovered cultural sites during project activities. If a site is discovered during the project, stop activities in the area until a Forest Service archaeologist evaluates the site and its importance. Apply any protective measures recommended.	Protect cultural resources until they can be evaluated for eligibility to the National Register.	National Historic Pres. Act; Forest Service Manual; Forest Plan, IV-6 and IV-7

Management Requirement	Objective	Source
Fire and Fuels		
Evaluate fuel conditions in harvest units and treat fine fuel loadings that exceed Forest Plan standards. Treatment may include lop and scatter, broadcast burning, hand piling and burning, or machine piling and burning.	Minimize the risk, potential spread, size, impacts, and suppression costs of future wildfires.	Forest Plan, IV-126 Forest Fire Action Plan, Chapter 50
Air Quality		
Water roads or apply dust abatement substances during dusty conditions.	Control dust pollution.	Standard operating procedure for health and safety.
Develop prescribed burn plans for slash pile and/or broadcast burning that meet state and federal clean air standards. Conduct slash burning only under prescribed conditions in burn plans.	Protect air quality in and around the airshed. Minimize the amount and duration of particulate emissions.	Forest Plan, IV-87
Vegetation		
Control noxious weeds if found in the sale area through a variety of methods that meet current Forest direction.	Reduce competition with native vegetation.	Forest Plan, IV-44
If any TES plant species are located during the project, stop activities that may affect plants until a botanist can survey area and assess effects.	Protect TES and Watch plant species and their habitats.	Forest Plan, IV-29; Forest Service Region 4 direction; FSM 2670

Mitigation Measures

Mitigation measures are activities designed to reduce or prevent undesirable effects from an action. They can include minimizing the effects by limiting the action, rectifying the effects, reducing effects through maintenance, or compensating for effects. The mitigation measures listed here are designed to reduce or prevent adverse effects resulting from implementation of the alternative. The mitigation measures listed in Table 2-2 would be applied to the action alternatives. For each measure, the objective, enforcement mechanism, effectiveness rating, and basis for the effectiveness rating are shown.

Mitigation effectiveness is rated as follows:
High: The mitigation is highly effective (greater than 90 percent), and its effectiveness is supported by one or more of the following: (1) research or literature; (2) administrative studies; (3) judgment of an expert; (4) logic or reason.

Moderate: The mitigation is moderately effective (estimated at 60 to 90 percent), and its effectiveness is supported either by evidence or logic. Implementation of this mitigation needs to be monitored, and the mitigation may be modified if needed to achieve its objective.

Low: The mitigation is thought to be somewhat effective (estimated at less than 60 percent), but its effectiveness is not supported by substantial evidence, or professional judgment indicates limited success in implementation or meeting objectives.

Unknown: Effectiveness is unknown because there is little or no documentation of effectiveness or logic is uncertain. Mitigation of unknown effectiveness requires both effectiveness and validation monitoring to determine success in meeting objectives.

Table 2-2. Mitigation Measures

Mitigation Measure	Objective	Enforcement Mechanism	Enforcement Responsibility	Effectiveness / Basis for rating
Water Quality and Soil				
Restrict ground-based logging equipment to designated skid trails on slopes less than 45%. Require operators to pull winch line to logs during yarding. Allow tractor slash piling off designated skid trails on slopes less than 35%. Require excavator piling off designated skid trails on slopes 35 to 45%.	Limit detrimental disturbance of soils to confined areas that will be reclaimed after use to meet long-term soil productivity goals.	Timber sale contract	Contract Administrator	HIGH: Froehlich et. al, 1981; Clayton, 1990; experience
Reconstruct, where needed, drivable dips to manage water on open system roads used by purchaser.	Reduce potential for sediment delivery to streams during and after the sale.	Timber sale contract	Engineering Representative	MODERATE: Burroughs and King, 1989
Divert streamflow around culvert installation sites. Use sediment control methods like straw bales or silt fence to avoid or reduce direct sediment input to streams. Seed or mulch (tackifier or matting) on new fills at culvert installation sites.	Minimize direct input of sediment to stream channels during road-related work.	Timber sale contract	Engineering Representative	LOW: Fact, experience
Obliterate temporary roads and landings not retained for future use by loosening compacted soils with a winged-type ripper (or other appropriate equipment) to 16 inches or depth of compaction, partially pulling back of fill slopes, water barring, and pulling slash over the surface to achieve a minimum of 40-50% ground	Restore and stabilize detrimentally disturbed soils prior to seasonal runoff events.	Timber sale contract	Contract Administrator	HIGH: Johnson, 1995.

Mitigation Measure	Objective	Enforcement Mechanism	Enforcement Responsibility	Effectiveness / Basis for rating
cover prior to seasonal runoff events.				
Gravel an estimated 5.8 miles of road surface on FS Road 294 from the Forest boundary to the subwatershed divide between Sixmile and Brown Creek. Line inslope ditches that show signs of down-cutting with pitrun.	Reduce potential for accelerated erosion and sediment delivery to streams both during and after the sale.	Timber sale contract	Engineering Representative	HIGH: Burroughs and King, 1989
Gravel road surface within 100 feet of perennial and intermittent stream crossings on portions of Forest roads to be used for timber haul in the project area. Roads include 294, 297, 298, 299, 300, 756, 936, and 559.	Reduce potential for accelerated erosion and sediment delivery to streams both during and after the sale.	Timber sale contract	Engineering Representative	HIGH: Burroughs and King, 1989
Obliterate an estimated 3.9 miles of non-system road by outsloping, ripping, seeding, and fertilizing. Remove culverts and stabilize streambanks. Road segments include 331, 104, 103, 4, 27 to wooden culvert failure, 146 to first stream crossing, 98, 31 just past first stream crossing, 54, 5, 95378, and 95648 just past the two culvert removal sites.	Reduce potential for accelerated erosion and sediment delivery to streams.	Record of Decision.	Zone Watershed Improvement Administrator, District Ranger	HIGH: Johnson, 1995
Reclaim all designated skidtrails after use by loosening compacted soils to 16 inches or depth of compaction, waterbarring, and pulling slash over the trail to achieve a minimum 50% ground cover prior to seasonal runoff events. Recontour excavated skid trails by partially pulling fill slopes to maintain an	Restore and stabilize detrimentally disturbed soils prior to seasonal runoff events.	Timber sale contract	Contract Administrator	HIGH: Garland, 1983; Caffera 1983; Johnson, 1995; experience; fact

Mitigation Measure	Objective	Enforcement Mechanism	Enforcement Responsibility	Effectiveness / Basis for rating
outslope greater than trail gradient.				
Construct slash filter windrows at the toe of fill slopes on newly constructed temporary roads and landings.	Minimize the extent of sediment routing to stream channels.	Timber sale contract	Contract Administrator	MODERATE: Burroughs and King, 1989
Reconstruct drivable dips and scarify, seed, and fertilize system roads in the project area that are closed year-round to the public but needed for administrative use	Reduce potential for sediment delivery to streams during and after the sale.	Record of Decision.	District Ranger	MODERATE: Burroughs and King, 1989
Require full suspension yarding over RHCAs for conventional skyline systems. Otherwise, suspend the leading end of log to the landing.	Reduce potential for sediment delivery to streams during and after the sale.	Timber sale contract	Contract Administrator	MODERATE: experience, fact
Reclaim skyline unit corridors by placing slash to achieve a minimum of 50 percent ground cover prior to seasonal runoff.	Stabilize detrimentally disturbed soils prior to seasonal runoff events.	Timber sale contract	Contract Administrator	MODERATE: experience, fact
Air Quality				
Use approved dust abatement treatments to control dust on Road 294 from Highway 95 past the Circle C Ranch buildings.	Control dust along road through private property.	Timber sale contract	Contract Administrator	HIGH; Fact, experience
Fish Habitat				
Transfer and store all fuels in containment areas. Place fuel stored in 55-gallon containers on wooden pallets.	Reduce potential for fuel spills that could affect fish or fish habitat.	Spill prevention plan, sale contract, 40 CFR 112	Contract Administrator	MODERATE: Fact, experience
On-site fuel storage over 660 gallons will require a spill contingency plan approved by the Forest Service. This shall contain, at a minimum,	Reduce response time if a toxic spill occurs that endangers fish or fish habitat.	Spill prevention plan, sale contract, 40 CFR 112	Contract Administrator	MODERATE: Fact, experience

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Mitigation Measure	Objective	Enforcement Mechanism	Enforcement Responsibility	Effectiveness / Basis for rating
response procedures for handling a spill, the measures to be taken, and a map of designated containment locations. This plan and a spill response kit will be carried in all transport vehicles. A pilot car with a CB (citizens band) radio will precede the helicopter fuel vehicle while it is transporting fuel over unsurfaced dirt roads.				

Monitoring and Evaluation

The following list includes items that would be monitored and evaluated if an action alternative is implemented. Please see Appendix C for the detailed monitoring and evaluation plan developed for this project.

- Implementation of Best Management Practices (BMPs) and Soil and Water Conservation Practices (SWCPs). Determine if site-specific BMPs and SWCPs identified in the Record of Decision for this EIS are being implemented. Provide qualitative assessment of effectiveness of BMPs and SWCPs.
- Implementation and Effectiveness of Coarse Woody Debris (CWD) Guidelines. Determine whether the specified amount, size, and distribution of CWD for the purpose of maintaining long-term soil productivity remains within harvest units following all harvest-related activities.
- Implementation and Effectiveness of Road Closures and Obliteration. Determine whether specified roads have been closed or obliterated, and assess effectiveness of closures and obliteration in restricting public motorized access.
- Effectiveness of Reforestation. Assess success and survival of regeneration within regeneration harvest units to ensure that the 5-year NFMA requirement for regeneration harvest is met.
- Implementation and Effectiveness of Snag Guidelines. Determine whether the amount, size, and distribution of snags remaining in harvest units following brush disposal meet snag habitat expectations.
- Implementation of Wildlife Habitat Protection Measures. Coordinate with Timber Sale Administrator before and during sale to ensure that wildlife habitat protection measures are properly implemented.

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Comparison of Alternatives

This section compares the alternatives described in detail in this chapter. Table 2-3 compares activities and outputs of the alternatives, and Table 2-4 compares the effects of the alternatives on the major issues described in Chapter 1. See Chapters 1 and 3 for background on the issues. See Chapter 3 for a complete description of effects and the scientific basis for these results.

Table 2-3. Comparison of Activities and Outputs by Alternative*

Activity or Output		Alternative I	Alternative II	Alternative III
Timber Harvest	Acres Treated	0	290	179
	Volume (MBF)	0	5,429	2,671
Harvest Systems (Acres)	Tractor Yarding	0	163	163
	Skyline Yarding	0	16	16
	Helicopter Yarding	0	111	0
Silvicultural Systems (Acres)	Even-aged Regeneration (EAR)	0	237	126
	Free Selection (FS)	0	33	33
	Patch Clearcut (PCC)	0	20	20
Slash Disposal (Acres)	Machine Pile and Burn	0	125	125
	Excavator Pile and Burn	0	66	54
	Broadcast Burn	0	90	0
	Lop and Scatter	0	9	0
Reforestation (Acres)	Planting	0	258	147
	Natural	0	7	7
Roads (Miles)	New Construction	0	0	0
	Improvements	0	16.6	16.6
	Obliteration	0	3.9	3.9
	Closures	0	13.8	13.8
	Open Roads After Sale	34	16.3	16.3
Other Disturbances (Acres)	Landing	0	6	5
	Aggregate Source	0	1	1
	Borrow Source	0	1	1
	Water Source	0	1	1
Economics (Dollars)	Net Present Value	-$336,714	-$309,263	-$198,398

*All numbers are estimates based on the best available information at this time.

Table 2-4. Comparison of Environmental Effects to the Major Issues by Alternative

Issue 1. Erosion and Sediment Delivery

Indicator	Subwatershed - Year	Alternative I	Alternative II	Alternative III
Modeled Sediment as Percent Over Natural	Brown Creek – 2001	8.5	14.3	14.1
	Brown Creek – 2004	8.5	7.1	7.1
	Brown Creek – 2006	8.5	4.5	4.5
	Sixmile Creek – 2001	12.7	13.3	13.3
	Sixmile Creek – 2004	12.7	12.3	12.3
	Sixmile Creek – 2006	12.7	12.2	12.2
	Middle Little Salmon – 2001	75.9	90	90
	Middle Little Salmon – 2004	75.9	62.4	62.4
	Middle Little Salmon - 2006	75.9	56.7	56.7

Issue 2. Soil Productivity

Indicator	Alternative I	Alternative II	Alternative III
Total Soil Resource Commitment	2.5% of Project Area	2.3% of Project Area	2.3% of Project Area

Issue 3. Goshawk Habitat

Indicator	Alternative I	Alternative II	Alternative III
Goshawk Nesting, Post-Fledging, and Foraging Habitats	Meets habitat requirements	Meets habitat requirements	Meets habitat requirements

Issue 4. Elk Habitat

Indicator	IRA - Time Period	Alternative I	Alternative II	Alternative III
Elk Habitat Effectiveness Value Forest Plan Target Level = 30	IRA 365 - Current Condition	19	19	19
	IRA 365 - During Sale	19	19	19
	IRA 365 - After Sale	19	61	61
Elk Habitat Effectiveness Value Forest Plan Target Level = 85	IRA 362 - Current Condition	90	90	90
	IRA 362 - During Sale	90	90	90
	IRA 362 - After Sale	90	90	90

Issue 5. Vegetation, Fire and Fuels - Forest Structure

Indicator		Desired Condition	Alternative I	Alternative II	Alternative III
Percent of Project Area in:	Openings	10-20	4	10	8
	Young Forest	20-30	20	20	20
	Mid-aged Forest	40	43	41	40
	Old Forest	20	33	29	32

Issue 5. Vegetation, Fire and Fuels - Compared to Historic Norms

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Species Composition	0	290	179
Acres of Improved Structure	0	290	179
Acres of Improved Density	0	290	179
Acres of Reduced Insect and Disease Activity	0	290	179
Acres of Reduced Fuel Loading	0	290	179

Issue 5. Vegetation, Fire and Fuels - Stand Growth and Health

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Stand Growth and Health	0	290	179

Issue 6. Roadless Character and Wilderness Potential

Indicator	Alternative I	Alternative II	Alternative III
Acres Eligible for Future Wilderness Consideration in the Project Area	1,449	1,214	1,449
Acres Eligible for Future Wilderness Consideration in the Patrick Butte Roadless Area	80,644	80,409	80,644
Effects on Wilderness Attributes: Natural Appearance Natural Integrity Opportunity for Solitude Opportunity for Primitive Recreation Special Feature (salmon habitat)	No alternative would adversely affect the special feature of chinook salmon habitat in Hard Creek. Alternatives I and III would not affect any other wilderness attributes. Alternative II would adversely affect all other wilderness attributes by introducing harvest into an estimated 105 acres along the edge of the 80,644 acre Patrick Butte Roadless Area.		

Identification of Preferred Alternative

Alternative II, the proposed action, is the preferred alternative for the Brown Creek Timber Sale. This alternative is described in detail starting on page 2-3 of this chapter, and includes the management requirements and mitigation measures on pages 2-11 through 2-18.

Chapter 3

Affected Environment and Environmental Effects

CHAPTER 3
AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Introduction

Chapter 3 describes issue-related resources that may be affected by the alternatives presented in Chapter 2, and the effects that the alternatives may have on those resources. Affected environment and environmental effects have been combined into one chapter to give the reader a more concise and connected depiction of what the resources are and what may happen to them under the alternatives. The environmental effects analysis forms the scientific and analytic basis for the comparison of alternatives that appears at the end of Chapter 2.

Organization of Resource Sections

Chapter 3 is organized by the resources that are related to issues in Chapter 1. Each resource section is organized in the following order.

Scope of the Analysis – Briefly describes the geographic area(s) affected for the resource issue and its indicators. Areas can be different for direct, indirect, and cumulative effects.

Desired Condition – Summarizes pertinent Forest Plan direction for the issue.

Past Actions That Have Affected the Current Condition – Describes history, development, past disturbances, natural events, and interactions that have helped shape the current condition.

Current Condition – Describes the current condition of the resource. This is also the *Affected Environment.*

Direct and Indirect Effects of the Alternatives – Analyzes the direct and indirect effects of the alternatives on the resource issue and indicators. *Direct effects* are caused by an action and occur at the same time and place. *Indirect effects* are caused by an action but occur later in time or farther removed in distance.

Cumulative Effects – Analyzes the *cumulative effects* that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions (40 CFR 1508.7 and .8).

Irreversible and Irretrievable Commitments – *Irreversible commitments* are permanent or essentially permanent resource uses or losses; they cannot be reversed, except in the extreme long term. Examples include minerals that have been extracted or soil productivity that has been lost. *Irretrievable commitments* are losses of production or use for a period of time. One example is suited timber land being used for a logging road. Timber growth on the land is irretrievably lost while the land is a road, but the timber resource is not irreversibly lost because the land could grow trees again in the near future if the road were obliterated and returned to production. These commitments are not the same as significant effects (see 40 CFR 1508.27 for definition of significance). The Forest Service recognizes the fact that certain management activities will

produce irreversible or irretrievable resource commitments, and follows Federal and State laws and Forest Plan direction to keep the commitments within acceptable limits.

Forest Plan Consistency – Displays whether the predicted effects of the alternatives are within Forest Plan standards and guidelines and/or follow Forest Plan direction.

WATER QUALITY AND SOIL

Scope of the Analysis

All proposed activities are within three subwatersheds of the Little Salmon River drainage. The analysis area includes portions of two National Forest System (NFS) watersheds: 1) Meadows Valley Watershed, and 2) Hazard Creek Watershed. Activities are proposed in three subwatersheds, as listed in Table 3-1. Brown Creek and Sixmile Creek are pure subwatersheds. Middle Little Salmon is considered a composite subwatershed that contains several smaller tributaries on each side of the Little Salmon River.

Table 3-1. Subwatersheds Analyzed

Meadows Valley - NFS #043			Hazard Creek- NFS #045		
Subwatershed	Number	Acres	Subwatershed	Number	Acres
Sixmile Creek	43-2	3949	Brown Creek	45-9	5155
Middle Little Salmon	43-3	1799			

National Forest System lands within the subwatersheds will be used to display the current conditions and the direct, indirect, and cumulative effects of the water resource issues identified in Chapter 1. The project area, a smaller subset of the three subwatersheds, will be used to analyze total soil resource commitment (see Figure 3-1).

In addition, the Little Salmon subbasin will be analyzed for cumulative effects. The subbasin, or 4th-level Hydrologic Unit Code (HUC) watershed is approximately 375,000 acres. The approximate acres by major landowners include: 1) Forest Service with 225,000 acres, 2) private lands with 121,000, 3) BLM with 16,000 acres, and 4) State with 13,000 acres. There are six 5th-level HUC watersheds and a total of 29 6th-level HUC watersheds within the subbasin (USDA, Little Salmon River Subbasin Review, undated).

Desired Condition

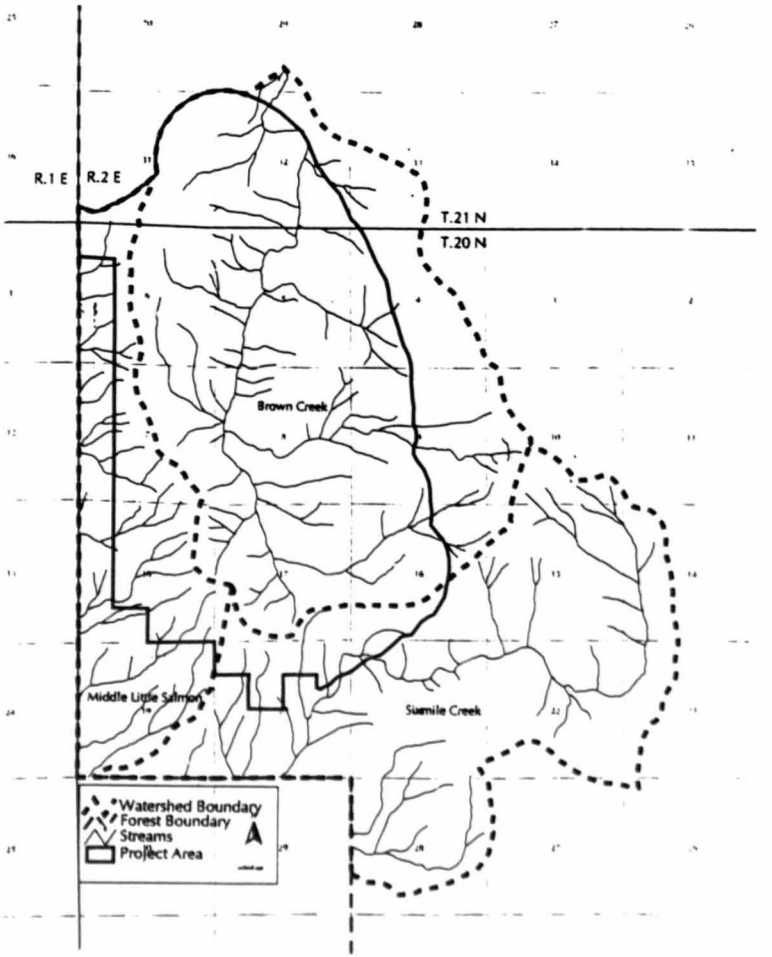
Water quality meets, or exceeds, Idaho Water Quality Standards for the protection of beneficial uses. Riparian areas are managed to maintain or improve riparian-dependent resources. Recruitment of large woody debris is maintained to provide for stream stability and fish habitat.

Long-term soil productivity is maintained at levels equal to or greater than 90 percent of natural potential. To achieve 90 percent natural potential of soil productivity, soil disturbances are managed within levels described on pages IV-70 to IV-86 of the Forest Plan, and coarse woody debris is maintained above the minimum levels described in the Payette National Forest Snag and Coarse Woody Debris Guidelines (Evans and Martens 1995).

Past Actions That Have Affected the Current Condition

Soil productivity and water quality within the Little Salmon River have been affected by past management activities. Management disturbances such as agriculture, livestock grazing, timber harvesting, and

Figure 3-1. The Brown Creek, Sixmile, and Middle Little Salmon Subwatersheds



associated road construction have accelerated erosion. Accelerated fine sediment has adversely affected the beneficial uses of cold water biota and salmonid spawning and rearing within the Little Salmon River and its tributaries.

Historic Development And Management Disturbances

Logging, grazing, and irrigation diversion have been the principal management uses within the analysis area. Portions of the Brown Creek, Sixmile Creek and Middle Little Salmon subwatersheds, have been densely roaded and intensively logged during the past 40 years.

Road density in the Brown Creek subwatershed is 3.7 miles of road/square mile. Since the upper slopes of Granite Mountain and Bally Mountain remain unroaded and unlogged, road density is much higher in the lower elevations of the drainage. In the Sixmile drainage, only the western-most portion has been roaded and logged. Only a portion of the Middle Little Salmon subwatershed is located within National Forest System lands. Boise Cascade Corporation owns approximately one half of the 1,799 acres within the subwatershed, but these acres are not part of the analysis.

The area has been part of a cattle allotment for several decades, and currently supports 142 head of cattle from July through September. For several years, this portion of the allotment was rested, but use resumed in the summer of 1998.

The Delbare/Campbell Irrigation Ditch runs along the east side of the Brown Creek valley at about 5,600 feet in elevation. It removes water from all the major eastside tributaries of Brown Creek from about June 15 until October and transfers that water to the Sixmile Creek Subwatershed.

State Water Quality Standards

The State of Idaho, Department of Health and Welfare, Division of Environmental Quality (IDHW-DEQ) designated "beneficial uses" in 1992. Beneficial uses for the Little Salmon River include domestic and agriculture water supply, cold water biota, salmonid spawning, primary and secondary contact recreation, and special resource waters. The beneficial uses that have the potential to be affected by the proposed alternatives are cold water biota and salmonid spawning.

The IDHW-DEQ designated the Little Salmon River from Round Valley Creek to confluence with the Main Salmon River as a Water Quality Limited Segment (WQLS) in 1998. A "Problem Assessment" and "TMDL" (Total Maximum Daily Load) have not yet been prepared for the Little Salmon River, and are scheduled for the year 2004.

Current Condition

The current condition of the soil and water resource addresses accelerated erosion and sediment, total soil resource commitment, impacts to the riparian resource, and level of hydrologic risk.

Accelerated Erosion and Sediment

Erosion occurs when energy from rainfall and runoff is sufficient to detach and move soil particles. Sediment is derived primarily from surface erosion and mass wasting from the watershed uplands and from channel cutting of the streambed and streambanks. Erosion and sediment occur in all watersheds as a natural geologic phenomenon. Management activities such as roading and logging can accelerate erosion and sediment beyond the historic range of variation and geological rate (Satterlund and Adams 1992).

Table D-2 in Appendix D describes each landtype found in the analysis area and lists their erosion and stability hazards (USDA 1973). Accelerated erosion and sediment are addressed through the application of the BOISED sediment model. The current condition is displayed as the No Action Alternative found in the Direct and Indirect Effects section (Table 3-5).

Roads - Forest road construction, maintenance, and vehicle use have been well documented as major sources of accelerated erosion and sediment. Megahan and Kidd reported that the average increase for a 6-year period following road construction within the Deep Creek subwatershed of the South Fork Salmon River drainage was about 750 times the undisturbed erosion rate. Approximately 90 percent of the increased erosion occurs within the first two years after construction (Megahan and Kidd 1972). Accelerated erosion and sediment from roads continue over the long-term as a result of traffic use, compaction, high runoff, and concentrated water on the road surface, ditch lines and from relief culverts. Cut and fill slopes can also be a chronic source of surface erosion and mass failures (Satterlund and Adams 1992, Megahan 1991).

The open system and non-system roads within the project area were reviewed through a broad reconnaissance survey in 1996. The travelway on Forest Road 50294, from the Forest boundary to the Brown Creek subwatershed divide, showed signs of high erosion due to the native granitic material and steep grade. The reconnaissance survey indicated several other road segments within the project area needed road maintenance to reestablish driveable dips and waterbars. Many of the existing system roads are closed due to regrowth of shrubs and conifers on the travelway. Several miles of both open and closed non-system roads were identified. Several culverts need to be removed along non-system roads. Two wooden culverts with a large extent of fill on top have been identified. One has partially failed, delivering approximately 50 yards of sediment directly to the stream channel. The areas of the highest sediment delivery are in the stream RHCAs where the roads either run parallel to the stream, or cross the stream. Table 3-2 provides the number of miles of road for each of the three subwatersheds on NFS lands.

Table 3-2. Roads by Subwatershed

Subwatershed	Miles of Road on National Forest Lands	Miles per Square Mile on National Forest Lands
Brown Creek	29.4	3.7
Sixmile Creek	13.7	2.4
Middle Little Salmon	24.9	8.9

Timber Harvest - Portions of the three subwatersheds within the analysis area have been extensively logged for over 40 years. No commercial timber harvest has occurred in the analysis area since the late 1980s on National Forest System lands. See the *Vegetation, Fire, and Fuels* section of this chapter for the history of past timber harvest. With the exception of existing roads, sediment from past harvest units has recovered to natural rates.

Total Soil Resource Commitment (TSRC)
Disturbances that are considered TSRC are those that convert a productive site to an essentially nonproductive site for a period of 50 years or more. These areas, in most cases, are dedicated to a specific management use that precludes other uses of the land and removes the majority of the productive capability of the land. TSRC types of disturbances often create the greatest amount of accelerated soil erosion because they normally remove the uppermost layers of the soil and totally expose the soil for various periods of time during and after construction. Within the project area, TSRC is associated with roads from past timber management activities (see Table 3-3).

Table 3-3. Existing TSRC Within the Project Area

TSRC Type	Acres	% of Project Area
Roads	130.4	2.5

TSRC currently exists on 130.4 acres or 2.5 percent of the project area. The Forest Plan standard is 5.0 percent or less.

Detrimental Disturbance (DD)
DD can result from timber management and other activities that produce unacceptable levels of soil degradation by compacting, moving, eroding, heating, or puddling the soil. DD is greatest with ground-based yarding methods of timber harvest, less with skyline, and least with helicopter yarding methods. Within the project area, DD is associated with areas that have been harvested in the past. The Forest Plan standard is 20 percent or less of the project area in a state of detrimental disturbance.

Riparian Areas
Riparian areas include the riverine system of stream channels, flood plains, and adjacent riparian vegetation, and the palustrine system of wetlands, swamps, bogs, marshes, and seeps. Forest personnel have partially inventoried the three subwatersheds within the analysis area, using the Level II Integrated Riparian Inventory procedure. The inventory classified stream type and evaluated stream channel condition.

Rosgen Stream Types (RST) were inventoried and mapped based on channel entrenchment, width/depth ratio, sinuosity, stream gradient, and channel particle size. Rosgen Stream Types are used to give a qualitative rating of inherent sensitivity to disturbance. Certain stream types are resilient to disturbance -- such as changes in streamflow or livestock grazing -- while others are easily destabilized (Rosgen 1994).

Stream channel stability was evaluated using the Pfankuch methodology (USDA Forest Service 1996b). Channel stability analysis looks at factors such as bank stability, sediment deposition, and vegetation cover. These factors describe stream condition and indicate how streams may respond to impacts such as resource use, stream flow variations, or vegetation changes.

Brown Creek Subwatershed - The Brown Creek drainage is a north/south oriented "hanging" glacial valley nestled between Granite and Bally Mountains. Brown Creek rises in a palustrine area at the southern end of its valley and flows north for about four miles through a low-gradient, U-shaped glacial valley composed of valley train lands -- alluvium, terrace and moraine remnants, and glacial outwash. At

the north end of this valley, the creek plunges off oversteepened lateral moraine slopes to its confluence with Hard Creek. Hard Creek is a tributary to Hazard Creek, which is a major tributary to the Little Salmon River.

The first two miles of Brown Creek are classified as a Rosgen Stream Type B4, with a stream gradient of two to four percent and a gravel substrate bottom. The stream then changes to C5 and E5 channels, with stream gradients of one percent and sand substrate bottoms. These two segments, C5 and E5, are highly sensitive to disturbances such as changes in streamflow or livestock grazing. These low-gradient channels store sediment that is transported to them from steeper tributaries. The final reach of Brown Creek above Hard Creek is a very stable A2a channel that cascades off the oversteepened lateral moraine slopes.

Channel stability rankings along Brown Creek are generally in the "fair" category, mainly due to high sediment loads, especially in the low-gradient C5 and E5 channels (USDA 1996b).

Sixmile Creek Subwatershed - Sixmile Creek drains the south slope of Granite Mountain, flowing south and then generally west to the Little Salmon River. Lands in the Sixmile drainage tend to be "strongly glaciated scoured glacial trough lands", scoured bedrock, and glacially scoured land that were subsequently cryoplanated (USDA 1996b).

Upper Sixmile Creek tributaries are mostly A2a/A3a channels with gradients from 10-15 percent. The lower mainstem are mostly B3/B4 channels, with gradients averaging 5 percent, and substrate dominantly cobble and gravel. These are relatively stable channels. There is one section of C3 channel. Here the channel appears "blown-out" in places, with eroding banks and lots of root exposure and debris. Bottom materials are less stable and there are extensive deposits of fine sediments (USDA 1996b).

Stream channel stability is "good" along most of Sixmile Creek. Many sections are well-armored and protected by a healthy mid-story vegetation cover. There are some sections that indicate heavy grazing pressure. The C3 channel section is characterized by active bank sloughs and channel widening, and downward soil and vegetation trends (USDA 1996b).

Middle Little Salmon Subwatershed - This subwatershed is a composite subwatershed located mostly off National Forest System lands. The headwaters of several of its tributaries are found within the analysis area. These lands are "moderately dissected mountain slope lands", a fluvial landtype subject to moderately high erosion hazards. These headwater streams are mostly A and B channels. Bank stability is fair to good along all the streams. Impacts from timber harvesting and grazing are evident. Riparian vegetation has been altered by past timber harvest activities, with the overstory entirely or partially removed in a number of places (USDA 1996b).

Wetlands - Wetlands are those water-dominated areas such as swamps, bogs, marshes, or seeps. They are more formally defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Several large wet meadows are mapped within the 104 landtype in the bottom of Brown Creek. There are an unknown amount of smaller wetlands scattered throughout the landscape that have not been mapped.

Riparian Habitat Conservation Areas (RHCAs) - RHCAs are designated stream courses, wetlands, landslides and landslide-prone areas with special riparian management objectives. Perennial and

intermittent streamflow regimens were identified from USGS cartographic feature files and partially verified on the three subwatersheds. Additional verification would occur during any sale layout.

Hydrologic Risk

Hydrological risk is an assessment of the potential change in flow regimen and its subsequent impact to stream channels. Water yield characteristics and streamflow regimen are inextricably interrelated. Water yield increases, resulting from changes in vegetation, are primarily a result of decreases in evapotranspiration. Evapotranspiration losses are directly affected by removal of forest vegetation by timber harvest, wildfire, or other events.

Removal of vegetation by timber harvest results in evapotranspiration losses and increases in water yield available for streamflow in direct proportion to basal area reduction (Troendle 1983). An increase in potential energy can increase sediment from channel cutting and streambank destabilization. Troendle and King have documented peak flow discharges occurring as much as 7.5 days earlier than normal due to timber harvest (in Satterlund and Adams 1992).

Hydrologic risk was determined using a modified procedure of the Cumulative Watershed Effects Analysis Process For Idaho (Idaho Department of Lands 1993). Percent canopy removal index (CRI) was determined by using the Forest timber strata database. The channel stability index (CSI) was determined from the channel stability rating for the main stem of Sixmile and Brown Creeks. Table 3-4 summarizes the potential hydrologic risk for Brown Creek and Sixmile Creek subwatersheds. The Middle Little Salmon is a composite watershed with only a small portion being on National Forest System lands; therefore, this type of analysis is not appropriate.

Table 3-4. Hydrologic Risk in Brown Creek and Sixmile Creek Subwatersheds

Subwatershed	Canopy Removal Index II	Channel Stability Index CSI	Hydrologic Risk
Sixmile Creek	18	31	Low
Brown Creek	28	41	Moderate

Direct and Indirect Effects of the Alternatives

Accelerated Erosion and Sediment

The major water quality concern from National Forest System lands within the Little Salmon River is human- caused accelerated erosion and sediment. Erosion occurs when energy from rainfall and runoff is sufficient to detach and move soil particles. Sediment is derived primarily from surface erosion and mass wasting from the watershed uplands, and also from channel cutting of the streambed and streambanks.

Erosion and sediment occur in all watersheds as a natural geologic phenomenon. However, management activities such as road construction and timber harvest can accelerate erosion and sediment beyond geological rates (Satterlund and Adams 1992, Megahan 1991). Properly implemented watershed improvement projects would reduce sediment to the Little Salmon River and/or its tributaries over the long term.

BOISED - Sediment was modeled using the R-1/R-4 Sediment Prediction Guides and the computerized BOISED sediment prediction model (Reinig, et al. 1991). The sediment predictions are only useful as a general index of the magnitude of expected effects on sediment yields, since no model can totally represent actual implementation, natural complexities, or future climatic events. The main value of these predictions is the relative comparison of sediment production expected among alternatives, and the model should not be used as a sediment budget.

The BOISED model is applied to subwatersheds using landtypes, which are units of land with similar land-form, geologic, soil, and vegetative characteristics. A geologic erosion factor and sediment delivery rate is assigned to each landtype. Factors considered in the model include: miles and gradient of existing road, new road construction, road reconstruction, road use, landing construction, and harvest unit by harvest method. Mitigation measures include graveling of road travelway and stream crossings, obliteration of temporary roads and landings, and placement of slash filter windrows or silt fence. The model was applied to one scale (subwatersheds), and erosion, sediment, and mitigation coefficients were equally applied to all alternatives.

Model outputs are expressed as percent over natural on an average annual yield for each subwatershed. Climatic variation and other complexities of natural systems all affect the capability of the land to distribute water, cause erosion, and result in sedimentation. BOISED predicts average annual conditions, and actual sediment yields for individual years may differ from modeled values by an order of magnitude or more. Because of model limitations, the proper use of the model is to compare the relative difference between alternatives.

Tables 3-5, 3-6, and 3-7 display modeled sediment predictions for each subwatershed by alternative.

Table 3-5. Modeled Sediment Predictions for Brown Creek subwatershed

Year	Percent Over Natural Sediment		
	Alt. 1	Alt. 2	Alt. 3
2000	8.5	8.5	8.5
2001	8.5	14.3	14.1
2002	8.5	9.4	9.4
2003	8.5	9.2	9.2
2004	8.5	7.1	7.1
2005	8.5	5.3	5.3
2006	8.5	4.5	4.5
2007	8.5	4.4	4.4
2008	8.5	4.4	4.4

Table 3-6. Modeled Sediment Predictions for Sixmile Creek subwatershed

Year	Percent Over Natural Sediment		
	Alt. 1	Alt. 2	Alt. 3
2000	12.7	12.7	12.7
2001	12.7	13.3	13.3
2002	12.7	12.5	12.5
2003	12.7	12.4	12.4
2004	12.7	12.3	12.3
2005	12.7	12.2	12.2
2006	12.7	12.2	12.2
2007	12.7	12.1	12.1
2008	12.7	12.1	12.1

Table 3-7. Modeled Sediment Predictions for Middle Little Salmon subwatershed

Year	Percent Over Natural Sediment		
	Alt. 1	Alt. 2	Alt. 3
2000	75.9	75.9	75.9
2001	75.9	90.0	90.0
2002	75.9	67.2	67.2
2003	75.9	66.7	66.7
2004	75.9	62.4	62.4
2005	75.9	58.4	58.4
2006	75.9	56.7	56.7
2007	75.9	56.5	56.5
2008	75.9	56.5	56.5

Alternative I - Alternative I proposes no activities within the subwatersheds. This alternative would have no effect on the amount or timing of human-caused sediment produced beyond accelerated erosion from existing roads. There is no timber harvest proposed in this alternative.

Alternative II - Alternative II proposes to harvest 290 acres. Harvest methods include helicopter logging 111 acres, skyline logging 16 acres, and tractor logging 163 acres

Short-term Effects - In 2001, modeled sediment would increase in all subwatersheds due to road reconstruction, landing construction, and timber harvest activities. Sediment levels are predicted to recover and decrease below current levels (2000) within 1 to 3 years after the project begins due to mitigation measures associated with obliterating, closing, and improving existing roads.

Helicopter harvest (111 acres) would have the least impact to accelerated erosion and sediment of all harvest methods. Clayton documented soil disturbance caused by helicopter logging and broadcast burning in the Idaho Batholith compared to undisturbed slopes during the first two years after logging. Total soil disturbance was 19 percent two years after logging and burning. Broadcast burning caused soil disturbance primarily in the form of litter loss on 14 percent of the total area, helicopter logging resulted in disturbance from gouging and scraping during felling and yarding operations on 3 percent of the area, and 2 percent of the area was disturbed as a result of both logging and burning (Clayton 1981).

Skyline harvest (16 acres) would occur from existing roads. Short-term accelerated erosion would be aggravated below the road and on road fills as skyline logs are dragged along the ground. Mitigation includes the placement of logging slash along the skyline corridor where logs are dragged, and the construction of slash filter windrows below newly constructed temporary roads and landings (see Chapter 2, *Mitigation Measures*).

Tractor harvest (163 acres) would occur on units that have slopes less than 45 percent and can be reached from existing roads. Designated skid trails, which would be ripped and slashed after logging is completed, would mitigate short-term accelerated erosion.

A gravel pit would be developed in the Sixmile Creek subwatershed to meet road surface travel needs for this and possible future road improvements. The proposed pit would disturb approximately two acres. Two hundred feet of an existing closed road would be reopened to provide access.

Sediment would increase from road reconstruction, landing construction, and gravel pit development. Mitigation measures such as graveling the road surfaces and inslope ditches would have an immediate effect of reducing sediment from the existing road surfaces.

Accelerated soil erosion would also be generated from temporary road and helicopter landing construction and/or obliteration. The accelerated soil erosion would occur from the time of construction until the sites become revegetated following obliteration. Temporary roads and landings not required for future use would be mitigated with Forest Plan erosion control methods (see Chapter 2, *Mitigation Measures*). Additionally, the accelerated soil erosion already being produced from existing roads would be reduced through graveling of some roads and all stream crossings used for timber hauling within the project area.

Long-term Effects - Most long-term, human-caused sediment originates from existing roads within the analysis area. All road improvement projects and watershed improvement projects are designed to reduce sediment production over the long-term. The graveling of Forest Road 294 from the Forest boundary to the Brown Creek subwatershed divide would have a long-term benefit to the Sixmile Creek and Middle Little Salmon subwatersheds. The spot graveling of perennial and intermittent stream crossings on Forest Roads 294, 297, 298, 299, 300, 559, 936, and 942 would also have a long-term benefit in reducing sediment delivered to stream channels (Burroughs and King 1989). The administrative closure of 13.8 miles of system road would reduce erosion and sediment delivery by: 1) reestablishing road drainage features, 2) reducing vehicular traffic, and 3) scarifying, seeding, and fertilizing the road travelway.

The obliteration of 3.9 miles of open system and non-system roads would reduce sediment once revegetation objectives are met (Johnson 1995). Obliteration of all helicopter landings and temporary roads would reduce sediment from these newly disturbed sites to near natural levels over time. Revegetation of closed road surfaces would reduce erosion over time as vegetation becomes established.

The removal of six culverts on roads to be obliterated (including two wooden culverts), and the stabilization of streambanks at these stream crossings, would eliminate the risk of culvert and fill failures at these sites.

Alternative III - Alternative III proposes to harvest 179 acres. This alternative is exactly the same as Alternative II, except that all helicopter units have been dropped.

Short-term Effects - The calculated modeled sediment is basically the same as Alternative II. The only difference between the two alternatives is that Alternative III eliminates several helicopter units and the need to construct helicopter landings. As stated above, helicopter harvest has the least impact to accelerated erosion and sediment of all harvest methods.

There would be a slight reduction in actual sediment due to the elimination of all helicopter harvest units and landings; however, the calculated "percent over natural sediment" displays only a 0.2 percent difference in year 2001 in the Brown Creek subwatershed.

Long-term Effects - Long-term effects for Alternative III are the same as described for Alternative II because the predicted sediment production is basically the same, and the sediment reduction activities -- such as graveling existing roads and stream crossings, and road obliteration -- are all the same as well.

Total Soil Resource Commitment (TSRC)

Total Soil Resource Commitment occurs when an area is converted to an essentially nonproductive site for a period of 50 years or more. With timber management activities, new areas of TSRC are generally produced by new road construction, gravel pit development, the development of permanent skidtrails, and the construction of landings. These disturbances are generally the most impacting of timber management activities on the soil resource because they produce an area where the most productive portion of the soil is physically removed, resulting in the exposure of mineral soil and the greatest potential for accelerated soil erosion (Graham, et al. 1991).

Alternative I would leave TSRC at the present 2.5 percent of the project area.

Alternatives II and III would obliterate all designated skid trails, helicopter landings, and temporary roads not needed for future timber management activities that were developed for the alternative. The ground-based and skyline landings would be scarified, planted, and slashed to reduce the effects of compaction and erosion.

Total Soil Resource Commitment would remain at the existing condition with Alternative I. No additional road construction would occur and no additional landings or skidtrails would be required, and no roads or landings would be obliterated. With Alternatives II and III, TSRC from temporary roads and landings would be returned to production through obliteration immediately following their use. Obliteration of open non-system roads would reduce the total amount of TSRC. TSRC for areas disturbed but returned to production and for road obliteration are shown in Table 3-8. Alternatives II and III would reduce TSRC in the project area to 2.3 percent, which meets the Forest Plan standard of 5 percent or less, and improves upon the existing condition, as represented by Alternative I.

Table 3-8. Acres and Percent of TSRC in the Project Area by Alternative Following Implementation Activities

TSRC	Alternative I	Alternative II	Alternative III
Acres	130.4	118.3	118.3
Percent of Project Area	2.5	2.3	2.3

Detrimental Disturbance (DD)

Detrimental Disturbance (DD) occurs when natural soil characteristics are altered to a degree that results in immediate or prolonged degradation of resource quality standards. With timber management activities, DD generally results from activities that compact the soil, move the soil, erode the soil, heat the soil to unacceptable levels, or are carried out under saturated soil conditions. Detrimental types of soil disturbance are greatest with the use of ground-based equipment for yarding, less with skyline yarding methods (especially full suspension), and least with helicopter methods. Likewise, the use of ground-based equipment for slash/brush disposal treatments has the greatest potential to produce DD, although broadcast burning during periods of dry fuel conditions can produce DD in the form of heated soils, which can increase the potential for accelerated soil erosion and have negative effects on soil biology.

The potential for additional DD in any alternative would be partially mitigated as a result of implementing the management requirements and mitigation measures described in Chapter 2, such as:

- restricting ground-based equipment to slopes of less than 45 percent;
- restricting ground-based equipment to designated skidtrails for all yarding activities;
- requiring full suspension of logs over RHCAs;
- using helicopter yarding where road access is not available;
- implementing BMPs and Soil And Water Conservation Practices (see Appendix D); and
- obliterating designated skid trails, temporary roads, and landings after use.

No additional DD would result from Alternative I as no further soil disturbance would occur. In Alternatives II and III, the potential for additional amounts of DD would be heavily mitigated, resulting in potential levels of additional DD that would be very small or eliminated. The total amount of DD would meet the Forest Plan standard of 20 percent or less on all timber harvest units.

Coarse Woody Debris (CWD)

Implementing Payette National Forest Snag and CWD Guidelines (Evans and Martens 1995) for all harvest units in Alternatives II and III would ensure that the amount of CWD required to maintain long-term soil productivity is retained.

Riparian Areas

Due to the designation and protection of RHCAs, no loss of, or adverse impacts to riparian areas would occur. Neither action alternative would increase the number of stream crossings or linear feet of road within the RHCAs. No new roads or facilities would be constructed in wetlands or riparian areas by either action alternative; therefore, no alternative would remove riparian areas from production.

Alternatives II and III would enhance and improve the riparian areas along the stream reaches where culverts are removed and streambanks are stabilized with vegetation.
RHCA stream and wetland buffers were established from USGS topographic maps, using interim PACFISH direction. Field verification of perennial, intermittent, and ephemeral streams would be required to ensure all channels are identified and proper RHCA designation and protection is applied. Verification would be done prior to project implementation.

Alternatives II and III would leave a 300-foot buffer around fish-bearing streams, a 150-foot buffer around other perennial waters, and a 100-foot buffer around intermittent streams. These buffer widths have been shown to be highly effective in trapping sediment on slope from sheet and rill erosion. However, erosion from channelized flow could still transport sediment through the buffer strips (Belt, et al. 1992).

Stream crossings on Forest Road 294 would be treated with gravel in Alternatives II and III. Road surfaces would also be spot graveled at stream crossings along the haul route, which is the same for both alternatives. Sediment delivery can occur more quickly and efficiently at stream crossings, and the graveling of road travelway approaches would reduce direct sediment delivery to streams at these crossings.

Hydrologic Risk

Impacts to water yield and peak flows are considered indirect effects because they are removed in time from the activity that causes the response.

Removal of live forest vegetation can reduce evapotranspiration, increase soil saturation and overland flow, increase water yield and peak flow; and result in earlier peak discharge (Troendle 1983). An increase in potential energy from increased streamflow can increase sediment from channel cutting and streambank destabilization (Satterlund and Adams 1992). Recovery rates for water yield and hydrologic risk may take decades until forest canopy is reestablished (Potts, et al. 1989; EPA 1980). A hydrologic risk analysis was conducted for all alternatives; the results are displayed in Table 3-9, below.

The channel stability index (CSI) would remain the same for all alternatives. The canopy removal index (CRI) would increase slightly, but less than one percent, from an existing condition of 18 percent in the Sixmile Creek Subwatershed, and from 28 (Alternative I) to 30 and 29 percent (Alternatives II and III) in the Brown Creek Subwatershed.

There would be no increase in the overall hydrologic risk rating due to the relatively small increase in CRI for Alternatives II and III. The hydrologic risk would remain "low" in the Sixmile Creek Subwatershed and "moderate" in the Brown Creek Subwatershed.

Table 3-9. Hydrologic Risk in Analysis Area Subwatersheds by Alternative

Subwatershed	Alternative I - CRI Canopy Removal Index	Alt. II - CRI	Alt. III - CRI	Hydrologic Risk
Sixmile Creek	18	18	18	Low
Brown Creek	28	30	29	Moderate

Cumulative Effects

Cumulative effects are those that result from past and present activities, proposed activities, and reasonably foreseeable future activities. The activities that affect the soil resources are limited to the actions that cause soil disturbance or manipulate vegetation within the same project area. These actions are addressed in the Current Condition and Direct and Indirect Effects sections of this resource analysis. There are no additional activities, either present or foreseeable, that will affect the soil resource. The activities that affect water resources are addressed for each 6th level HUC subwatershed located within the National Forest boundary.

A long duration rain-on-snow event at the end of 1996 and beginning of 1997 caused flood damage to the main stem of the Little Salmon River drainage below the Middle Little Salmon Subwatershed. Snow, rain, and record high temperatures produced record peak flows at the Little Salmon River USGS gauge at Riggins. Landslides occurred within the steep canyon between 2,000 and 4,500 feet in elevation. Debris flows and lateral stream migration resulted in damage to roads and several private residences along the Little Salmon River. The three subwatersheds analyzed for the Brown Creek Timber Sale are situated at elevations generally well above 4,500 feet. Therefore, they were not affected by the rain-on-snow event.

Brown Creek Subwatershed

Impacts from past timber harvest and road construction were discussed in the Past Actions and Current Condition Section of this Chapter. This timber sale is the only other foreseeable timber harvest activity planned in the Brown Creek Subwatershed and is addressed in the Direct and Indirect Effects Section. Livestock grazing by cattle is the only other activity that may affect the water resource. Impacts from livestock grazing are the same for all alternatives. As livestock grazing is reintroduced to the project area, isolated streambank trampling is expected and may result in an unquantified sediment increase.

Sixmile Creek Subwatershed

Impacts from past timber harvest and road construction were discussed in the Past Actions and Current Condition section of this Chapter. The Brown Creek sale is addressed in the Direct and Indirect Effects Section. The Fourmile Timber Sale is in a portion of the Sixmile Creek Subwatershed and was sold in 1998. Sediment would increase slightly (approximately one percent) in the Sixmile Creek Subwatershed from the Fourmile Timber Sale in the short term (0-5 years). Livestock grazing by cattle is the only other activity that may affect the water resource. Impacts from livestock grazing are the same for all alternatives. As livestock grazing is reintroduced to the project area, isolated streambank trampling is expected and may result in an unquantified sediment increase.

Middle Little Salmon Subwatershed

Impacts from past timber harvest and road construction were discussed in the Past Actions and Current Condition sections of this Chapter. This timber sale is the only other known timber harvesting activity planned in the Middle Little Salmon Subwatershed on NFS lands and is addressed in the Direct and Indirect Effects Section. Additional activity could be proposed from a Forest Service watershed analysis scheduled to be completed for this area in the next year. Livestock grazing by cattle is the only other activity that may affect the water and soil resources. Impacts from livestock grazing are the same for all alternatives. As livestock grazing is reintroduced to the project area, isolated streambank trampling is expected and may result in an unquantified sediment increase.

Little Salmon Subbasin
Management activities throughout watersheds in the subbasin have affected the quantity and quality of water, processes of sedimentation and erosion, and the production and distribution of organic material, thus affecting hydrologic conditions. On Federal and State administered lands, the most pronounced changes to watersheds and water quality are due to road construction, as well as vegetation alteration including silvicultural practices, fire exclusion, wild and prescribed fire, and forage production (USDA, UCRB-DEIS, May 1997). In addition to the aforesaid activities, activities on private lands include agricultural management, industrial use, and residential developments. Dams and diversions have altered flow regimes of streams, rivers, and lakes within the subbasin. Banks and beds of streams and rivers have been altered by bank structures especially in the main Little Salmon River along Highway 95 and adjacent to private property.

Irreversible and Irretrievable Commitments

No alternative would have irreversible commitments to soils, water quality, water quantity, or riparian areas. The action alternatives would return about 12 acres to productivity and reduce Total Soil Resource Commitment in the project area; the No Action alternative would not. Any accelerated sediment delivered to streams under the action alternatives would cause an irretrievable loss of water quality. The analysis indicates that the increase of accelerated sediment delivered to streams by the action alternatives would be minimal and short-term, and that overall accelerated sediment would be reduced over the long-term.

Forest Plan Consistency

Water Quality Management
All alternatives meet Forest Plan standards and guidelines for water quality by implementing "State Approved Best Management Practices (BMPs) as referenced in the Idaho Water Standards and Wastewater Treatment Requirements" and by implementing "Forest Service Soil and Water Conservation Practices" (Forest Plan, IV-71). A BMP Crosswalk and Effectiveness Rating are provided in Appendix D.

Soils
Soil productivity will be maintained to a level greater than 90 percent of natural potential based upon meeting the DD standard of 80 percent of an activity area in a non-detrimentally disturbed condition and meeting Total Soil Resource Commitment of less than 5 percent. Total Soil Resource Commitment for the project area would decrease from 2.5 to 2.3 percent in Alternatives II and III and would meet the Forest Plan 5 percent standard. Coarse woody debris guidelines would be met or exceeded in all alternatives. Alternatives II and III, with the stipulated management requirements and mitigation measures, would maintain detrimental disturbance within the Forest Plan standard in harvest units.

Riparian Areas
The Forest Plan requires that "All projects will follow the six-step *Project-Level Planning* requirements found in the Forestwide Standards and Guidelines for Riparian Area Management" (page IV-93). Step 1 requires field inventory and delineation of all riparian areas within the project boundaries. Steps 2 through 6 are designed to maintain or improve the riparian areas for riparian-dependent resources by assessing condition and trend and developing management objectives. The Forest Plan adopted PACFISH interim guidelines in 1995. For this project, PACFISH guidelines were used to meet Steps 2

through 6 by delineating riparian habitat conservation areas (RHCAs) and restricting or prohibiting management activities within these areas to meet PACFISH riparian management objectives.

Alternatives II and III have delineated (from topographic maps) and buffered RHCAs using PACFISH direction. Three subwatersheds have been partially field-verified using the Level II Integrated Riparian Inventory Step 1. Further field verification and monitoring of perennial, intermittent, and ephemeral streamflow regimen -- as well as seeps, springs, and bogs -- will be required to ensure riparian area protection. This field verification will occur prior to or during final project layout (see Chapter 2, *Management Requirements*).

WILDLIFE HABITAT

Scope of the Analysis

The proposed sale activities are analyzed in four areas for wildlife habitat. For elk and other ungulates, the direct and indirect effects of proposed harvest and associated activities are analyzed within Issue Reporting Areas (IRA) 362 and 365. An IRA is a geographical analysis unit of about 5,000 acres or more, used during Forest and project planning to assess relative changes in elk habitat. These units are part of a larger unit called an Elk Management Unit (EMU). An EMU is a geographical analysis unit that represents elk movement and home ranges. The proposed harvest is in EMU 11. The cumulative effects analysis area for elk habitat will be EMU 11. For the pileated woodpecker, theoretical home range Circle 21 will be used as the area of analysis for direct, indirect, and cumulative effects. Other species, including sensitive species, will be analyzed in the Brown Creek project area for direct, indirect, and cumulative effects, based upon the probability of occurrence of a species within this area. The Canada lynx analysis area is the Lynx Analysis Unit (LAU).

Desired Condition

The Forest Plan direction for wildlife habitat was designed to provide a variety of wildlife habitats throughout the Forest to support viable populations of all native vertebrate species. There is no Forest Plan direction specific to sensitive species; therefore, certain basic habitat requirements for those species present will be the basis for the desired condition.

Past Actions That Have Affected The Current Condition

Past and ongoing activities, such as past fire suppression, timber harvest, road construction, and fuelwood gathering in the project area – as well as on adjacent Federal, State and private lands – have had the most effect to the various wildlife habitats the area provides. Past harvest activities have removed stands of mature and overmature forest or have reduced the amount of coniferous vegetation that once provided habitat and/or cover for some species.

Current Condition

A diversity of habitat for wildlife species exists within and around the project area. Vegetative conditions vary as well as the topography; however, long winters with an abundance of snow make this area seasonal habitat for most wildlife species. Small birds and small mammals are found throughout the area and are considered general forest dwellers. Habitats for several Forest sensitive species exist in the Brown Creek area because of the variety of vegetative components that meet their individual habitat requirements. The spruce/fir and lodgepole components provide habitat for the boreal owl and the three-toed woodpecker. A goshawk nesting area has been identified. Habitats for the great gray owl, the fisher, the wolverine, and the spotted frog are also found in the project area, although the probability of occurrence for the great gray owl, wolverine and the fisher is low. Big game species (black bear, mountain lion, elk, mule deer, and white-tailed deer) are present and are also considered general forest dwellers. Their seasonal movement into and out of the area is based upon the snow conditions in late spring and early winter. The area is not considered deer and elk winter/spring range; however, elk calving and deer fawning occur in the late spring.

Old Growth

Within the general old forest structural stage (described in the *Vegetation, Fire and Fuels* section of this document) can be found a more specific habitat type called *old growth*. Old growth has been defined by Thomas (1979) and adapted by the Payette Forest Plan to include the following characteristics: 1) fifteen trees per acre greater than 21 inches diameter at breast height; 2) two or more canopy layers; 3) 70 percent crown closure or more within these canopy layers; 4) at least 0.5 snags per acre; and 5) some trees with heart rot. This definition is an average condition over a stand and does not apply to every acre.

Old growth provides a unique wildlife habitat because of a high plant biomass, structural complexity, and many microsites. Many wildlife and plant species depend on the microsites provided by down logs and deep organic matter layers in old-growth forest. In addition, various fungi fulfill important functions in old-growth forest, such as providing a macro food source for small mammals and increasing soil fertility for trees and other plants (USDA 1991b).

To meet the Forest Plan standards on page IV-34, a minimum of 5 percent of mature forest is needed within theoretical home range Circle 21, of which 2.5 percent must be old growth as defined by the Forest Plan, page IV-34. A Payette National Forest inventory crew has field-verified 944 acres (3.2 percent) of Circle 21 and determined they currently meet the Forest Plan old growth definition (see planning record). The crew followed the Payette National Forest process for Old Growth Protocol (USDA 1997b). Forest Service strata information shows that 7,315 acres, or 25.2 percent of Circle 21, is mature forest. This exceeds the minimum 5 percent requirement of the Forest Plan.

In addition to the verified old growth, the Forest developed a predictive model for estimating Forest Plan old growth utilizing strata 23 and 24 and data collected within these strata. Based on data, the model assigns different percentages to each strata when making the predictions of old growth. Therefore, the predicted old growth varies based upon the strata composition for the designated area. The model predicts that there is 2.4 percent of Forest Plan old growth in Circle 21, although the Forest has field-verified 3.2 percent, and can be seen as a conservative prediction.

Utilizing Forest Plan old growth only to display potential effects on wildlife habitat and species is a conservative approach. Although many species (like the pileated woodpecker, boreal owl, three-toed woodpecker, white headed woodpecker, flammulated owl, great gray owl, northern goshawk, fisher and wolverine) are often referred to as *old growth dependent*, they are actually adapted to a variety of old and mature forest habitat conditions. It is likely that pileated woodpecker and many other old-growth dependent species would use a large portion of the old and mature forest, including that which is not Forest Plan old growth.

Management Indicator Species (MIS)

The National Forest Management Act (NFMA) directs National Forests to identify Management Indicator Species (MIS). MIS are species whose population levels indicate the effects of Forest management activities on the habitat they need to survive. By monitoring MIS and their habitats, Forest managers can estimate effects on other wildlife species on the Forest and develop activities that meet goals and objectives for wildlife management. The following species were selected as MIS for the Payette National Forest because their habitat requirements encompass a diverse range of forest successional stages (Forest Plan, page II-27).

Rocky Mountain Elk - The Forest Plan established a minimum Elk Habitat Effectiveness (EHE) rating for each IRA and EMU to indicate whether the objective of providing habitat capable of sustaining or increasing elk populations is met. These ratings are calculated through the West-Central Idaho EHE

model, which rates perfect elk habitat as 100 percent. Elk are suitable indicators for other species of wildlife that require a variety of successional stages and habitat types. The primary habitat factors considered by the model include open road miles, relative road impacts by use, cover-forage ratios, and the relative position of forage and cover. The projected EHE ratings can be different for each alternative, depending on acres and position of harvest units and miles of roads constructed or reconstructed. The EHE value can vary each year of the sale as the impact factors (roads and cover) change.

Habitat for elk has been modified by past management activities. Hiding and thermal cover remain adequate, and the juxtaposition of cover with forage is fair. Ungulate big game habitat requirements are outlined in the Forest Plan. For elk, they are to provide habitat capable of sustaining the elk population numbers as measured in 1988. To achieve that goal in EMU 11, the summer-weighted average EHE needs to exceed 70. The current summer-weighted average for EMU 11 is 81.

The current EHE for IRAs 362 and 365 are 90 and 19, respectively. The Forest Plan calls for EHEs of 85 in IRA 362 and 30 in IRA 365. The open road density is 0 miles/square mile for IRA 362, and 3.6 miles/square mile for IRA 365. The habitat for elk is considered fair; however, the high open road density in IRA 365 is the major factor in the low EHE value for that IRA.

Pileated Woodpecker - The pileated woodpecker represents wildlife associated with multi-canopy, old growth and mature forest that provides snags and large down logs for foraging, perch sites, nesting and roost cavities (Forest Plan, page II-27). These woodpeckers are fairly common on the Payette National Forest. Pileated woodpeckers create cavities that are used by species incapable of excavating their own nesting or roosting cavities, such as the boreal owl and the flying squirrel.

Williamson's Sapsucker - The Williamson's sapsucker represents cavity-dependant species associated with mature forest that require snags for nesting, roosting and foraging (Forest Plan, page II-27). Dense, mature forests are necessary for high population densities, and deciduous trees in the understory are beneficial. Currently, 76 percent of the project area is comprised of mid-aged and old forest (see VSS Class analysis in *Vegetation, Fire and Fuels* section) that could be used by this species. These woodpeckers occur throughout central Idaho; however, it is not likely that they are abundant in the Brown Creek project area because of the relative scarcity of deciduous trees present.

Vesper Sparrow - The vesper sparrow represents wildlife species associated primarily with dry, non-forested sites. Currently, only 3 percent of the project area is in an open condition (see VSS Class analysis in *Vegetation, Fire and Fuels* section). This species is found generally at lower elevations in drier grasslands with scattered shrubs. There is very little potential vesper habitat in the area, no vegetative management would occur in any potential habitat, and no record of occurrence exists for this area. Therefore, this species will not be further analyzed or discussed in this document.

Threatened and Endangered Species

Gray Wolf - The Brown Creek project area is not in the Central Idaho Gray Wolf Recovery Area (USDI Fish and Wildlife Service 1987), and translocated wolves are considered a non-essential experimental population. The analysis of effects in this document is based upon the availability of prey and the likelihood of human interaction with any wolf.

The U.S. Fish and Wildlife Service identified the gray wolf as potentially occurring in the project area. A biological assessment (BA) was completed in 1998.

Bald Eagle - No suitable habitat for nesting or foraging exists within or adjacent to the project area, and no record of occurrence exists for this area. Therefore, this species will not be further analyzed or discussed in this document.

Grizzly Bear - There are no recent confirmed reports of grizzlies being present in this part of Idaho. Therefore, this species will not be further analyzed or discussed in this document.

Peregrine Falcon - Peregrine falcon could occasionally use the project area and vicinity for foraging, but nesting habitat is not located within or adjacent to the project area, and no record of occurrence exists for this area. The peregrine falcon was delisted in August 1999. Therefore, this species will not be further analyzed or discussed in this document.

Lynx - Lynx are associated with alpine-boreal forest (Spahr, et al. 1991; Allen 1987). Preferred habitat is extensive, dense stands of lodgepole pine, interspersed with mature spruce-fir for cover, and early to mid successional stages for foraging (Groves and Marks 1985; Clark, et al. 1989; Spahr, et al. 1991). No extensive stands of lodgepole pine exist in the subwatershed. Lynx habitat as defined in the *Canada Lynx Conservation Assessment and Strategy*, LCAS (Ruediger, et.al.2000) for the western United States is lodgepole pine, subalpine fir, Engelmann spruce, and aspen or subalpine fir cover types. Cool, moist Douglas-fir, grand fir, or western larch forests, where they are interspersed with subalpine forests, also provide habitat for lynx.

The range of the lynx closely follows that of the snowshoe hare. In Idaho, prey consists of a variety of small, medium, and sometimes large animals, as snowshoe hares are not abundant (Koehler 1991). Lynx have not been documented on the Payette National Forest (Conservation Data Center 1993). There is a low probability of occurrence in the project area.

The LCAS was developed to provide a consistent and effective approach to conserve the Canada lynx on federal land in the conterminous United States. The conservation measures presented in the LCAS were used for analyzing effects of planned proposals on lynx and lynx habitat.

In the United States, lynx inhabit conifer and conifer-hardwood habitat that support their primary prey, snowshoe hare. During winter, lynx do not apparently hunt in openings, where lack of above snow cover limits habitat for snowshoe hares. Lynx hunt for snowshoes in vegetation that provides a high density of young conifer stems and branches that stick above the snow. High density of stems and branches was defined in Washington as >4,500 per acre. Older forests with a significant understory of conifer or small patches of shrubs and young trees that provide dense cover that touches the snow in winter provide good quality lynx foraging habitat. Lynx travel mostly through continuous forest, and frequently use ridges, saddles, and riparian areas. They will forage along edges of cover, but avoid large openings (page 7, LCAS).

Den sites are associated with large woody debris; either down logs or root wads in mature forests. For denning sites to be effective, they must be in or adjacent to foraging habitat (page 8, LCAS).

The LCAS portrays central Idaho lynx habitat on pages 46 and 47. Where large stands of fire-induced lodgepole pine dominate much of the subalpine fir habitat types and, especially when interspersed with unburned stands of subalpine fir, lodgepole pine provides very good quality lynx habitat. The quality of lynx foraging habitat (i.e. snowshoe hare habitat) however, often varies by habitat types. Engelmann spruce stands occur along streams and when present, provide good lynx travel and denning habitat.

Douglas-fir habitat types are important to lynx where lodgepole pine is a seral species and moist habitat types that can produce dense understory shrubs.
During June 2000, the Payette National Forest developed a "Lynx Analysis Protocol" to delineate LAUs across the Forest. Lynx habitat was initially identified using LANDSAT data in GIS for mapping at a coarse scale. Within each LAU, lynx habitat was refined using the best readily available information, a combination of Payette National Forest working groups and strata. Subalpine fir, spruce, and lodgepole pine with some mixed conifer were the working groups used. The protocol emphasizes that "when there are discrepancies between LANDSAT information (less reliable) and working groups delineation, ground verification is used to resolve the discrepancy."

Hazard Creek LAU

Landscape Analysis

The project area is in the Hazard Creek LAU (map filed at District Office). The Hazard Creek LAU consists of the upper Hard Creek and Hazard Creek watersheds, plus Brown Creek. Elevations range from 5,000 feet at the eastern base of Meadows Valley, 5,500 feet in Brown Creek to 8,400 feet on the higher peaks. The upper watersheds in the LAU are above 6,000 feet. Upper Hard Creek and Hazard Creek watersheds have been glacially scoured and contains U-shaped valleys with considerable exposed bedrock, ice carved perks, and glacial lakes (i.e. Hazard Lakes). The Brown Creek drainage on the west side of Granite Mountain differs from upper Hard and Hazard Creeks by being generally lower in elevation and having received less glaciation.

In upper Hard Creek and Hazard Creek watersheds, forested vegetation is extremely fragmented and non-continuous. The timber stands are in the form of stringers, with pockets of rock and nonforest within and between. The fire regime is predominately lethal (infrequent stand replacing fires).

Forested vegetation within the upper Hard Creek and Hazard Creek watersheds are subalpine fir with scattered pockets of Engelmann spruce. Relic whitebark pine is found along the upper ridge tops above 7,000 feet, though most have died from blister rust. A few stands of mature lodgepole pine are found on the lower slopes of the major drainage bottoms (i.e. Hard Creek), but amount to only a couple hundred acres.

Brown Creek drainage is mixed conifer stands (Douglas-fir, larch, ponderosa pine, grand fir) with an area of subalpine fir and Engelmann spruce adjacent to Brown Creek. Stands of lodgepole pine can be found in frost pockets within the drainage bottom. The mixed conifer stands are predominately mixed and variable fire regime with lethal and nonlethal (ground) fires. Subalpine fir and lodgepole pine are located in the lethal fire regime.

Winter snow depths above 6,000 feet are considerable. Winter snows can top five to ten feet annually in the Brown Creek drainage. Snow depths have been observed in the Hard Creek and Hazard Creek watersheds in the order of 10 to 14 feet. Snow depths in the Hard Creek and Hazard Creek watersheds are normally greater than adjacent drainages to the west, Brown Creek, and also drainages to the east (personal communication with Randy Skinner, New Meadows Ranger District, August 22, 2000).

Mapping of Lynx Habitat - Medium Scale

Following coarse scale mapping by use of LANDSAT, a less coarse mapping of lynx habitat using working groups and strata was completed in the LAU. Based upon this, the LAU has forested stands fitting the lynx habitat description as described in the LCAS. Approximately 55,477 acres in the LAU are within the mapped "lynx habitat line," but only an estimated 17,259 acres (31%) of the 55,477 acres

is considered lynx habitat, or less than a third of the area. The remaining 38,218 acres (69%) is considered non-habitat. Of the area considered as lynx habitat (17,259 acres), the current condition is approximately 40 to 45% unsuitable. The reason for this condition is primarily the 1994 fires (approximately 30%); the remainder is from past timber harvest. The LCAS, pages 77 and 79, states as standards not to reduce suitable habitat beyond 30 as unsuitable or change more than 15 percent of lynx habitat to an unsuitable condition in a 10-year period.

Field Verification - Fine Scale

Forest Service specialist familiar with the Hazard LAU felt that use of working groups and strata without additional information did not reflect the actual situation within the LAU. To determine the accuracy of mapping using working groups and strata, and to determine whether depicted lynx habitat in this situation was actually lynx habitat, field verification was undertaken.

On August 18, 2000, a field trip was made to the Brown Creek Timber Sale project area to review the proposed treatments and assess lynx habitat. Harvest units 409, 410, 411, and 319, located adjacent to Brown Creek and outside of PACFISH buffers, were checked. These harvest units are located in lynx habitat as determined by use of working groups and strata. Currently, none of the proposed harvest units provide any winter forage base, as there are no tall shrubs and only scattered lodgepole pine.

In Brown Creek, there was observed only incidental evidence of winter snowshoe hare browsing. Throughout the project area, few tall shrubs or lodgepole pine are available to provide for high densities of snowshoe hare.

On August 21, 2000, a Payette National Forest Wildlife Biologist and Inventory Forester reconned the Hard Creek and Hazard Creek watersheds. These two watersheds, based upon working groups and strata, composed the majority of the lynx habitat within the Hazard LAU. Live remnant stands, treated harvest units, the 1989 burn near Hazard Lakes, and the 1994 burn area were checked. Unburned stands, stands that had burned in 1989 and 1994, and past harvest units do not provide winter habitat for snowshoe hares and minimal summer habitat. Tall shrubs are not present and lodgepole pine is a minor, scattered or localized component.

In upper Hard Creek and Hazard Creek watersheds, dense shrub layers or dense stands of lodgepole pine are not present under any stage of development. These stands do provide habitat for red squirrels, and perhaps denning, but are fragmented stringers, with deep snow packs. More importantly, they lack the capability of providing for snowshoe hares during the winter. Forested stands within the Hard Creek and Hazard Creek watersheds do not provide lynx habitat.

Brown Creek is isolated from lynx habitat east of the Hazard LAU and is situated west of Granite Mountain overlooking Meadows Valley. It does not contain habitat to support a lynx. Brown Creek is not located within any travel way due to lower elevations and dry forest habitats and agricultural lands to the southwest and west.

The Hazard LAU does not provide lynx habitat to maintain a viable population in conjunction with other LAUs.

Northern Idaho Ground Squirrel - The project area does not have any known or potential northern Idaho ground squirrel habitat, and no record of occurrence exists for this area. Therefore, this species will not be further analyzed or discussed in this document.

Sensitive Species

Information from the Idaho Department of Fish and Game, the Conservation Data Center (1993), and wildlife field surveys was used to determine if any Forest Service, Intermountain Region sensitive species or their habitats are present or potentially present within the project area or subwatershed. A biological evaluation has been completed for species that have a known occurrence in the area or that have suitable habitat in the area. Other species on the Payette Forest sensitive species list that are not likely present in the area – because of no previous sightings, no potential habitat, or both – and that were not found in any field work, are spotted bat, Townsend's big-eared bat, mountain quail, harlequin duck, white-headed woodpecker, flammulated owl, and sharp-tailed grouse. These species are, therefore, not covered in this analysis.

The following sensitive species have the potential of occurrence or are found in the analysis area.

Northern Goshawk - Goshawks are fairly common on the Payette National Forest, based on habitat availability and recent sightings. They do nest in the project area. Effects of alternatives on the goshawk are analyzed with consideration given to recommendations of the goshawk committee for habitat management in the Southwestern U.S. (Reynolds, et al. 1992) and the modifications outlined in the memo (file designation 2670) from the Payette National Forest Supervisor to District Rangers, dated July 15, 1996.

Three-toed Woodpecker - Three-toed woodpeckers occupy lodgepole pine and mature/old spruce-fir forest, with nests commonly occurring in lodgepole pine snags. Lodgepole pine and spruce are preferred because their scaly bark flakes off easily when the bird is searching for insects (Bull et al., 1986). Three-toed woodpeckers generally occupy the same habitats as boreal owls but respond differently to insect outbreaks and fire. The project area is considered to be within the permanent occupied range of this woodpecker.

Boreal Owl - Boreal owls inhabit spruce-fir forest above 6,000 feet in north and central Idaho. They prey on small mammals including red-backed voles, flying squirrels, deer mice, shrews, pocket gophers, and voles. Nesting on this Forest occurs primarily within mature and overmature spruce-fir forest, but ponderosa pine, Douglas-fir, or aspen stands within 300 feet of the spruce-fir zone can be used for nesting if there is a scarcity of cavities in the spruce-fir zone. Populations of this species in west-central Idaho occur as isolated populations in upper elevation spruce-fir forest.

Fisher - In north-central Idaho, fisher select mature and overmature grand fir forest as summer habitat. In winter, they frequent young, mature and overmature forest (Jones 1991). Fishers have a strong affinity for forested riparian habitat for preferred prey species such as the red-backed vole. Habitat is characterized by dense multi-storied, late seral, mesic coniferous forest with large snags and downed logs (Allen 1987, Freel 1991). Fishers select large-diameter Englemann spruce trees and hollow grand fir logs for resting. Home ranges vary from approximately 30 square miles for males to 15 square miles for females (Jones 1991). This area is considered within the permanent occupied range of the fisher.

Wolverine - The wolverine is a wide-ranging, secretive species associated with remote environments (Hatler 1989). Southwest Idaho is included in the range of the wolverine (Spahr, et al. 1991). This species can wander over huge areas, and it is likely that they occur occasionally in most mountainous areas of the state. In central Idaho, wolverines are found primarily in coniferous forest habitats dominated by lodgepole pine (Groves and Marks 1985). They also seem to prefer spruce-fir habitats along riparian zones and meadows (Copeland and Groves 1992). The analysis area is comprised of

habitat suitable to the wolverine, but this species has a low probability of occurrence in the project area due to the small amount and fragmented distribution of that habitat.

Great Gray Owl - Great gray owls inhabit mixed conifer and hardwood forest near small clearings and openings. They occur in local concentrations where there is a density of small mammals in deep-soiled open forest or meadows with forest edges (Bull et al. 1988). The preferred elevation is 5,600 feet and below. Much of the subwatershed is above 5,000 feet in elevation, providing little suitable habitat for this species. For this reason, there is a low probability of occurrence in this area.

Spotted Frog - The spotted frog has wide distribution in northern and central Idaho and surrounding states. Locally, the spotted frog has been observed from the headwaters of the Weiser River on the western side of the Payette National Forest to Big Creek on the east side of the Forest. Spotted frogs are generally found in marshy edges of ponds or lakes, and near slow-moving water of streams. They make use of uplands during the non-breeding season. There is a moderate probability of occurrence in this area.

Direct and Indirect Effects of the Alternatives

Disturbance created by the sounds and sights of timber harvest and related activities would have some adverse effects on all species considered in this analysis. Most disturbances would result in temporary displacement. These effects would last for the duration of the project, roughly 2 to 5 years.

Old Growth

Alternative I (No Action) - There are 7,319 acres (25.2 percent) of mature forest in pileated Circle 21, and 1,662 acres in the project area. There would be no direct effects on mature forest, or the 944 acres (3.2 percent) of field-verified Forest Plan old growth.

Alternative I could indirectly result in allowing wildfire to determine where, when, and how much potential old growth and mature forest is converted to an early structural stage, although in a roaded, managed area, the likelihood for large wildfire is small.

Alternative II would harvest 176 acres of mature forest, leaving 1,486 acres in the project area and 7,143 acres (24.6 percent) in pileated Circle 21. Eighty-three acres of verified Forest Plan old growth would be harvested, leaving 861 acres (3.0 percent) in pileated Circle 21.

Alternative III would harvest 46 acres of mature forest, leaving 1,616 acres in the project area, and 7,273 acres (25.0 percent) in pileated Circle 21. No verified Forest Plan old growth would be harvested, leaving 944 acres (3.2 percent) in pileated Circle 21.

Both action alternatives would meet or exceed the Forest Plan standards for 5 percent mature forest and 2.5 percent old growth as defined by the Forest Plan. Indirect effects would be the same as Alternative I for untreated acres. Table 3-10 shows the effects to mature forest and old growth in Circle 21.

Table 3-10 Acres/Percent of Mature Forest and Old Growth Stands Harvested in Circle 21 by Alternative

Indicator	Alternative I		Alternative II		Alternative III	
	Acres	Percent	Acres	Percent	Acres	Percent
Mature Forest Harvested	0	0	176	0.6	46	0.2
Mature Forest Remaining	7,319	25.2	7,143	24.6	7,273	25.0
Verified Forest Plan old growth harvested	0	0	83	0.2	0	0
Verified Forest Plan old growth remaining	944	3.2	861	3.0	944	3.2

Management Indicator Species

Rocky Mountain Elk - Alternative I would not change the current condition, and the EHE rating would remain below the Forest Plan standard and guideline of 30 for IRA 365. Under Alternatives II and III, the EHE value would not change from the current condition until the closure and obliteration of some roads, then an EHE of 61 for IRA 365 would be obtained. Based upon model predictions, an increase in the EHE rating relates to an increase in elk numbers and therefore meets the Forest Plan objective of sustaining or increasing elk populations in the anadromous areas of the Forest. The miles of open road would decrease from 36.4 to 18.8 within IRA 365. This reduction is the primary reason for the increase in the EHE rating. In addition, the forage-to-cover ratio would change from 48/52 ratio to 50/50. The optimum forage-to-cover ratio ranges from 60/40 to 40/60. An improved EHE and Forage/Cover ratio relates to a potential increase in population numbers. There is no change in EHE numbers for IRA 362 for any alternative.

Pileated Woodpecker and Williamson's Sapsucker - Effects on habitat for these species would be very similar, as they both require old and mature forest, as well as snags and down logs for nesting and foraging. Alternative I would have no short-term direct or indirect effects on snags or down logs. Alternatives II and III would incorporate Forest guidelines for snag and coarse woody debris retention and would provide habitat for these and other cavity-dependent wildlife species (see Chapter 2, *Management Requirements*). Additional snags and down logs within the project area would be available to these species in unharvested areas, including all riparian areas. Road closures and obliteration proposed under Alternatives II and III would also have the long-term beneficial effect of restricting access for fuelwood gatherers that can remove the snag and down log component from an area over time.

Forest Plan direction requires that 2.5 percent of Forest Plan definition old growth will be maintained within each pileated home range circle where it currently exists. The existing 25.2 percent and 7,319 acres of mature forest would not change in Alternative I, but approximately 176 acres of mature forest would be harvested in Alternative II, and 46 acres would be harvested in Alternative III. As noted in the Current Condition portion of this analysis, Payette National Forest crews have field-verified that at least 3.2 percent (944 acres) of the forested acres within Circle 21 meet the Forest Plan old growth definition. Of this 3.2 percent, 3.0 percent was identified in areas that would not be harvested under Alternative II. Therefore, all alternatives would meet Forest Plan direction for old growth retention.

In addition to old growth habitat, the VSS Class analysis (see *Vegetation, Fire, and Fuels* section) indicates that an estimated 76 percent of the project area is currently in mid-aged to mature and old forest stands, which are used by these species. Alternative I would have no short-term effect on these structural classes. Alternatives II and III would convert an estimated 5 percent of old and mature forest to openings through harvest treatments. Although treatments would have localized effects on habitat within harvest units (mainly the removal of many large-diameter trees), these effects would be minor because 71 percent of the project area would continue to provide old and mature forest habitat. Although the percentage of harvest would be basically the same for both action alternatives, Alternative II would remove more large trees and snags than Alternative III, due to an additional 111 acres of even-aged harvest.

Threatened and Endangered Species

Gray Wolf - There would be little or no direct effects to the gray wolf as the result of any alternative. However, road management proposals in Alternatives II and III would have beneficial effects to the wolf. The primary prey base, elk, and its habitat would continue to remain stable or improve due to the improved EHE value (19 going to 61 in IRA 365) in the area as a result of improved forage-to-cover ratio and better road management. Reducing the open road density would favor the predator (wolf), as well as benefit the elk and deer indirectly, because of the reduced potential for human interaction.

Lynx

None of the alternatives would directly have any affect on lynx habitat, the lynx or its prey base due to the isolated nature of the project area, the lack of habitat capable of supporting an abundance of snowshoe hare, and in turn, supporting lynx in the Hazard LAU, and the lack of connection to lynx habitat. Indirectly, the proposed project would not have any effects on lynx over time, as lynx habitat is not present in the LAU.

Sensitive Species

Northern Goshawk - Alternative I would not change the existing habitat for this species, and habitat would be provided for the goshawk. In Alternatives II and III, goshawk needs would be provided for because the unit prescriptions and locations follow the recommended guidelines in the Southwest Guidelines and the percentages of various ages of forested stands outlined in the July 15, 1996 memo by the Forest Supervisor. Habitat for the nesting areas, post fledging area and foraging area would be maintained. Population numbers should remain stable.

Three-toed Woodpecker and Boreal Owl - Alternative I would provide habitat for the three-toed woodpecker and the boreal owl. Alternatives II and III would convert about 3 percent of their preferred habitat through timber harvest. Only 40 of over 1,600 acres of habitat would be harvested, resulting in minimal impacts to these species. Populations would remain stable.

Wolverine - Alternative I would not change the current condition and the high open road density would remain as a negative impact to this species. The potential for human disturbance is high and avoidance by this species is likely. Alternatives II and III would not affect this very uncommon species because of the low percent of preferred habitat that exists in the area and the low percent of that habitat proposed for harvest. Refer to the boreal owl and three-toed woodpecker section above for a similar level of effects. Beneficial effects would occur from road closures and the reduced potential for human interaction.

Great Gray Owl - Alternative I would not change the current condition and habitat for the great gray owl would continue to be provided. Great gray owl habitat is primarily below 5,600 feet. In Alternatives II and III, most of the stands to be harvested are at or above this elevation and would therefore not impact the owl. Riparian areas, unharvested mature forest and old growth, along with goshawk habitat

requirements would provide for the habitat needs for any potential nesting birds. There would be minimal negative effects to owl habitat and should not affect the owl population.

Fisher - Although fisher may be found in the project area, there is a low probability that the habitat conditions would provide for this species. Alternative I would not change the current condition. The direct and indirect effects of Alternatives II and III would be minimal because the percent of suitable habitat treated is low and the amount of remaining suitable habitat is high. Many of these same acres provide habitat for goshawk, pileated woodpecker, boreal owl, and the three-toed woodpecker as well.

Spotted Frog - All alternatives would have no direct or indirect effects on this species. Riparian buffers would keep any disturbance away from spotted frog habitat.

Cumulative Effects

Past Actions

The two human actions that have had the most impact on wildlife habitat within the cumulative effects area in the past are fire suppression and timber harvest. Fire suppression activities over the last 75 years have modified forest vegetation conditions in the area. In general, tree species have shifted from seral to climax, and stand age, densities, fuel loads, insect and disease activity, and mortality has increased. Fire suppression has favored wildlife species adapted to climax, closed-canopy forest conditions.

On the other hand, timber harvest in the last 30 years over portions of the cumulative effects area has had a different set of effects. Harvest has generally converted older structural stages to younger ones, and re-introduced seral species through reforestation. Harvest has also increased access into these areas, which has affected local populations of wildlife. Elk and other game animals are now more vulnerable to disturbance and hunting pressure. Increased roads have also allowed livestock to access riparian areas and other habitats. Species dependent on mature and old forest stands, such as the pileated woodpecker and the Williamson's sapsucker, have been affected by the reduction in large, standing snags and down logs.

Hunting, trapping, livestock grazing, pesticide use, animal damage control, and fuelwood gathering have also adversely affected populations of some species. Overall, the combination of these and other effects has changed wildlife distribution and populations from pre-settlement times.

The 1994 and 2000 large wildfires on the Payette National Forest did not burn in the Brown Creek project area, but did affect habitat across a large area to the north and east of the project area. The *Payette National Forest Broadscale Assessment for the Post-fire Landscapes* (USDA Forest Service 1995c) analyzed effects of the 1994 fires on MIS and TES species, concluding that the fires were not likely to adversely affect the viability of any species.

Ongoing and Proposed Actions

Fire suppression, livestock grazing, hunting, trapping, animal damage control, fuelwood gathering, and timber harvest would likely continue on Forest lands in the cumulative effects area. Hunting, trapping, and animal damage control would have cumulative effects on wildlife populations, particularly big game like elk and deer, and predators like wolf, coyote, fisher, and marten. Fire suppression, grazing, fuelwood gathering, and timber harvest would have cumulative effects on wildlife habitat, both in terms of disturbance and habitat modification.

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Effects from fire suppression would be similar to those described above under Cumulative Effects, Past Actions. Effects from livestock grazing -- including changes to rangeland and riparian conditions -- would be monitored and controlled under the allotment management plan process, and would be expected to improve over time. Fuelwood gathering would mainly affect snag and down log distribution, and this activity is largely controlled through access management. The largest influence on access management and habitat modification is expected to come from proposed timber sales.

Timber sales in the Forest's Seven-Year Action Plan that would occur within EMU 11 include Brown Creek (2000), and Fourmile (1998). Timber management could also result from the Partridge-Kelly watershed analysis in 2003. The only additional sale that would occur within the 50,000 acre pileated Circle 21 is Goose Creek (2000). Predicted effects from these sales are described for wildlife habitats and species below.

Old Growth

A Forest Plan old growth analysis was conducted for the cumulative effects area, following Payette National Forest protocol (USDA 1997b). This protocol uses a theoretical pileated woodpecker home range represented by a 10-mile diameter circle. The Brown Creek planning area is included in Circle 21. The amount of old growth needed within each pileated home range circle is 2.5 percent of the forested acres (Forest Plan, page IV-34). In 1997, a Forest Service inventory crew field-verified 3.2 percent of the forested acres meet this old-growth definition. A maximum 0.2 percent of verified stands would be affected by proposed timber activities.

Within Circle 21, there are two additional timber sales that would remove mature forest or potential Forest Plan old growth. These sales, Fourmile (sold in 1998) and Goose Creek (2000), together would harvest 258 acres of strata 23 and 24 within Circle 21 under their selected (Fourmile) and preferred (Goose Creek) alternatives.

Alternative I (No Action) - Of the 7,319 acres (25.2 percent) of mature forest in pileated Circle 21, 258 acres would be harvested in Fourmile and Goose Creek. This would leave 7,061 acres, or 24.3 percent, of mature stands in Circle 21. At this time, 3.2 percent (944 acres) of Forest Plan old growth would be set aside in Circle 21. Any future actions would not reduce the amount of Forest Plan old growth to less than 2.5 percent.

Alternative II would harvest 426 acres of mature forest in Fourmile, Goose Creek and Brown Creek. This would leave 6,885 acres (23.7 percent) of mature forest in pileated Circle 21. The Brown Creek Sale would harvest 83 acres of verified old growth, while the Fourmile and Goose Creek Timber Sales would not harvest any verified old growth, leaving 3.0 percent (861 acres) of Forest Plan old growth set aside in Circle 21. Any future actions would not reduce the amount of Forest Plan old growth to less than 2.5 percent.

Alternative III would harvest 304 acres of mature forest in Fourmile, Goose Creek, and Brown Creek. This would leave 7,015 acres (24.2 percent) of mature forest in pileated Circle 21. No verified old growth would be harvested under any present or foreseeable action, leaving 3.2 percent (944 acres) of Forest Plan old growth set aside in Circle 21. Any future actions would not reduce the amount Forest Plan of old growth to less than 2.5 percent.

Both action alternatives would meet or exceed the Forest Plan standards for 5 percent mature forest and 2.5 percent old growth remaining when combined with the Fourmile and Goose Creek projects.

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Pileated woodpecker circles found on the east side of the Forest include 23 Circles, Circles 21 through 43. The Forest estimated percentages of Forest Plan old growth found in each of these circles using the predictive model described earlier in this section (also see project record). This analysis shows that the estimated acres of Forest Plan old growth in these circles range from 0 percent to 10 percent of the forested acres. In all circles, no old growth would be harvested until 2.5 percent old growth has been field-verified and Forest Plan requirements for old growth and mature forest have been met.

Management Indicator Species

Rocky Mountain Elk - The Elk Habitat Effectiveness model was used to evaluate the activities in the IRAs and the EMU. The effects of past, present, and foreseeable future projects were incorporated in the Forest Plan target values for the IRAs. By reducing open road densities, the Brown Creek, Fourmile, and Goose Creek projects would have positive effects and benefit the entire EMU. EHE in the IRAs and EMU would exceed Forest Plan target levels. Overall, open road densities would be well below the Forest Plan target levels. Elk numbers should be stable or increase in the area.

Pileated Woodpecker and Williamson's Sapsucker - The amount of mature forest needed within the theoretical pileated home range circle is important to meet habitat requirements for pileated woodpeckers and other cavity-dependent species. The Fourmile and proposed Goose Creek projects were considered for effects on mature forest in the theoretical pileated home range Circle 21. The amount of mature forest that is cumulatively proposed for harvest by these sales in the circle is an estimated 258 acres for Alternative I, 426 acres for Alternative II, and 304 acres for Alternative III. This equates to 24.3 percent of mature forest being left in Alternative I, 23.7 percent in Alternative II, and 24.2 percent in Alternative III. All alternatives exceed the Forest Plan standard for retaining 5 percent of mature forest.

When the Brown Creek Project is considered with all past and reasonably foreseeable actions, Alternative I would retain 3.2 percent (944 acres) of the Forest Plan old growth, Alternative II would retain 3.0 percent (861 acres), and Alternative III would retain 3.2 percent (944 acres). Therefore, Forest Plan direction for old growth retention would be met. In addition, a high percentage (see Table 3-10) of the pileated circle would be retained in mature and old forest structural stages that provide habitat for these species in the form of large-diameter trees, snags, and down logs. These components would also be preserved within proposed sale areas to meet Forest-wide direction through the delineation of RHCA buffers and the implementation of Forest snag and coarse woody debris guidelines. Thus, adverse impacts would be minimal to these species and their habitats.

As noted in the Direct and Indirect Effects discussion, long-term beneficial effects would occur from road closures and obliteration in the Brown Creek sale that restrict access to fuelwood gatherers. Additional closures and obliteration are proposed in the Fourmile and Goose Creek projects.

Threatened and Endangered Species

Gray Wolf - Little or no adverse cumulative effects would occur to the gray wolf as the result of the Brown Creek Timber Sale when considered with other past, present or reasonably foreseeable actions. The primary prey base, elk, and its habitat would continue to remain stable or improve due to the stable or improved EHE values throughout the EMU (see Elk analysis, above). The reduction of open road densities in future projects (Brown Creek, Fourmile, Goose Creek Timber Sales) would favor the wolf and benefit elk and deer indirectly because of the reduced possibility of human interaction.

Lynx - This project, when considered with other past, present or reasonably foreseeable actions, should have no effects on lynx habitat over the long-term, as the habitat would be little altered from the present condition following implementation of the action alternatives. Access into the project area would be

more limited than the present condition. Management activities in the remainder of the drainage for the next several years would be limited. No new proposals are anticipated in the Brown Creek project area. The fire in 1994 had no direct effects in this area because it did not burn in the Brown Creek project area. The *Payette National Forest Broadscale Assessment for the Post-fire Landscapes* (USDA Forest Service, 1995c) concluded that the fires were not expected to adversely affect the viability of the lynx. Timber management projects in Goose Creek and Fourmile Creek, as well as the Brundage Ski Area expansion, have taken the needs of the lynx into prescription design. Again, the viability of the lynx will not be affected by those planned activities.

Sensitive Species

Northern Goshawk - No discernible adverse cumulative effects would occur to this species because the Southwest Guidelines and the Payette National Forest's policy in using those guidelines would be incorporated in management activities planned in goshawk habitat. Habitat for the nesting areas, post-fledging area and foraging area would be maintained. Proposed road closures and obliteration in Brown Creek, Fourmile, and Goose Creek sales would cumulatively reduce disturbance to this species over the long-term.

Three-toed Woodpecker and Boreal Owl - No discernible adverse cumulative effects would occur to these species because the Payette National Forest snag and coarse woody debris guidelines would be followed in all proposed timber sales in the cumulative effects area. Also, the proposed sales would have little impact on spruce-fir or lodgepole pine habitat, and effects on mixed conifer (stratum 23) habitat would be minimal (see cumulative effects for pileated woodpecker and Williamson's sapsucker).

Wolverine - No discernible adverse cumulative effects would occur to species habitat within the analysis area. The proposed sales would have little impact on spruce-fir or lodgepole pine habitat, and effects on mixed conifer (stratum 23) habitat would be minimal (see cumulative effects for pileated woodpecker and Williamson's sapsucker). Potential vulnerability would be reduced because of reduced open road densities.

Great Gray Owl - No discernible adverse cumulative effects are expected to occur to this species within the cumulative effects area. In the suitable habitat that is available, the protection of riparian areas, pileated old growth, snags, and goshawk habitat in any current or future projects would provide for the habitat needs of this owl.

Fisher - No discernible adverse cumulative effects are expected to occur to this species within the cumulative effects area. Forested riparian areas would be protected in proposed timber sales, and old growth and mature stands would largely be retained (see cumulative effects for pileated woodpecker and Williamson's sapsucker). Open road densities would be reduced, thereby reducing potential vulnerability to hunting and trapping.

Spotted Frog - No discernible adverse cumulative effects are expected to occur to this species within the cumulative effects area. Riparian habitat would be protected from any current or future project activities.

Combined Effects

The effects of the Brown Creek Timber Sale, when combined with effects from other past, present, and reasonably foreseeable actions and events in the cumulative effects areas, are not likely to adversely affect populations or the viability of any threatened, endangered, proposed, sensitive, or management indicator species on the Payette National Forest. For more information, see the Biological Assessment and Biological Evaluation for wildlife species in the project record.

Irreversible and Irretrievable Commitments

No irreversible or irretrievable commitments of wildlife habitat would occur in Alternative I. Some mature forest would be lost under Alternatives II and III. This loss would be irretrievable for 100 to 300 years. Alternative II would harvest 83 acres of Forest Plan old growth, which would result in an irretrievable loss of that habitat on those acres for 100 to 300 years.

Forest Plan Consistency

All alternatives would be consistent with Forest Plan direction concerning snag retention, and EHE value for IRA 362. Alternatives II and III would meet Forest Plan direction for EHE value in IRA 365 by closing currently open roads to reduce open road density in the area. This would improve the current EHE value from 19 to 61, well above the Forest Plan target level of 30. Alternative I would not close any roads, and the EHE value would remain at 19, 11 points below the Forest Plan target level.
All action alternatives would meet or exceed the Forest Plan standards for 5 percent mature forest and 2.5 percent old growth remaining.

VEGETATION, FIRE AND FUELS

Scope of the Analysis

The analysis area for direct and indirect effects is the project area (5,219 acres), as shown in Figure 1-1. The effects to vegetation, fire, and fuels are addressed below under the following headings: 1) Forest Structure; 2) Stand Characteristics and Conditions (Historic Norms); and 3) Stand Growth and Vegetative Health. Refer to the Purpose and Need section in Chapter 1 for additional background information.

The cumulative effects analysis area boundary runs from the Forest boundary north of New Meadows approximately 8 miles to the north/south ridge to the east (Granite Mountain), and from Threemile Creek near New Meadows to approximately 13 miles north near Hard Creek (see Figure 3-2). This area includes an estimated 19,000 acres.

This analysis focuses on tree vegetation. General information on the responses of grasses, forbs and shrubs to disturbance may be found in *Forest Habitat Types of Central Idaho* (Robert Steele and others, 1983) and other specific habitat type technical reports such as *The Grand Fir/Mountain Maple Habitat Type in Central Idaho* (Steele and Geier-Hayes, 1992).

Forest strata were used to assess stand characteristics and conditions, and stand growth and health for this analysis (see Figure 3-3). Stand examinations, a timber cruise, and on-the-ground review provided additional information and strata verification. Figure 3-4, working groups, shows the current forest composition changes across the planning area. All numbers are estimates based on the best current and available information.

Much of the thought behind historic norms (how stands should be treated to replicate historic conditions) comes from work done by Stephen Barrett in Rapid River in 1987 (Barrett, 1987) and knowledge of the land (habitat types, moisture conditions, elevation, slope and aspect). Additional references are in the appendix and project record.

Desired Condition

Forest Structure

Forest structure refers to the amount of open, young, mid-aged/mature and old forest within the planning area. The long-term objective is to sustain a balance of forest structures across the planning area to provide for wildlife habitat, biodiversity, and wood products on a sustainable basis.

The desired Vegetative Structural Stages (VSS) were derived from *Management Recommendations for Northern Goshawk in the Southwestern United States* (Reynolds, et al. 1992) and adapted to the Payette Forest in July of 1996 (see July 1996 Policy Letter in Project Record). The desired condition for VSS is shown in Table 3-11 on page 3-37.

Stand Characteristics and Conditions (Historic Norms)

The desired condition is to replicate historic conditions as closely as possible. That is, replicate the changes in stand structure, stand density, species composition, and fuel loading that would have normally taken place when wildfire occurred on these areas prior to influences by humans, including Native

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Figure 3-2. Cumulative Effects Area for Vegetation, Fire and Fuels

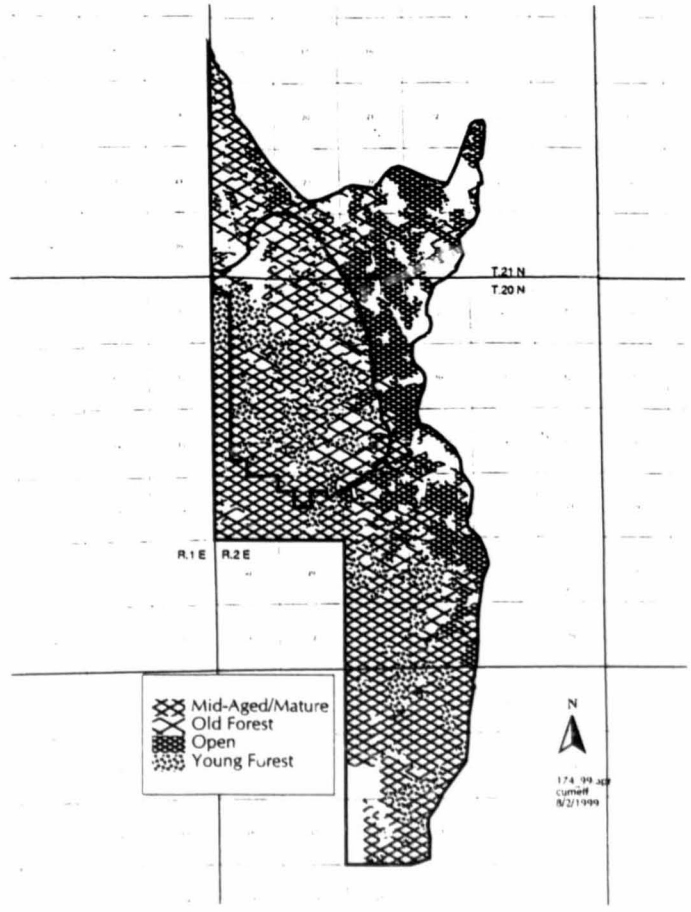

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Figure 3-3. Planning Area Strata (Current Condition)

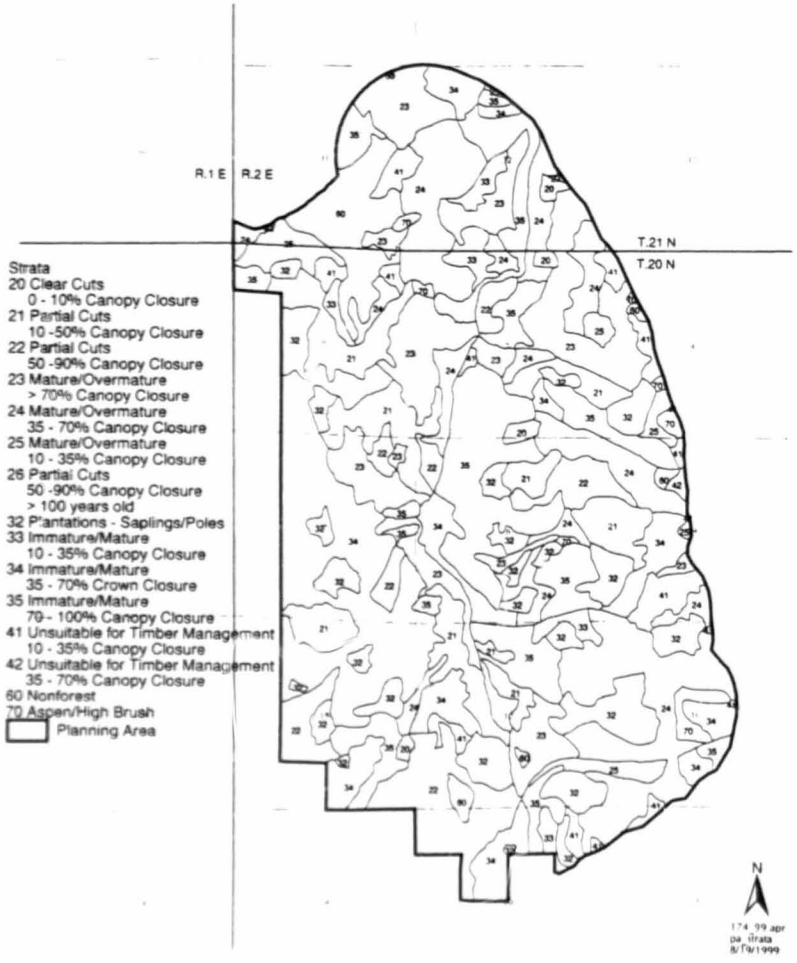
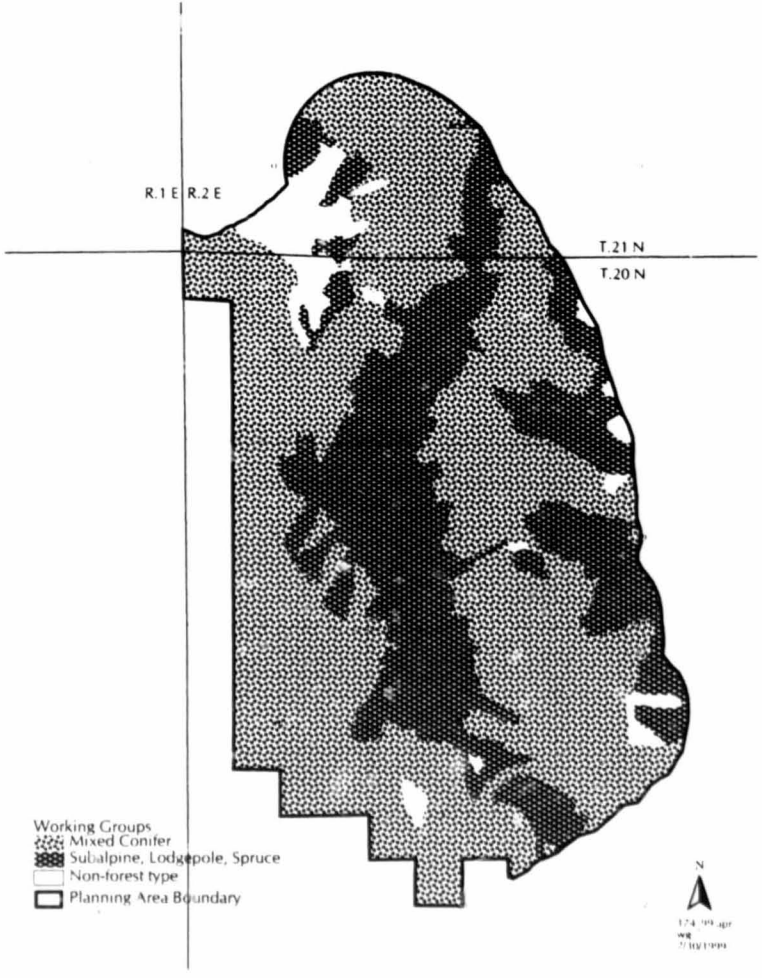


Figure 3-4. Planning Area Working Groups (WG)



Americans (Barrett 1987). Departures from historic norms are anticipated and dealt with so that wildfire and insect and disease outbreaks are avoided. From a historic perspective, the entire planning area is within either a mixed severity or lethal fire regime (mesic and wet sites). The difference between the mixed and lethal fire regimes is patch size (mixed having smaller patches) and the amount and distribution of the remnant overstory after a fire event (mixed having more).

The desired condition is even-aged, storied, or even-aged group stands that replicate historic mixed severity and lethal fire regimes. When a disturbance occurs, such as a timber sale, regeneration of early seral species such as western larch, Douglas-fir, lodgepole pine and ponderosa pine is encouraged. Stand densities are managed to avoid stagnation and excessive mortality (see stand growth and health below), though under purely historic conditions excessive densities in these fire regimes did exist prior to a fire event, especially in the lethal fire regime (stands became dense, trees died, fuels built up and a wildfire occurred). Insect and disease activity and impacts do not exceed a low to moderate level. Fuel loadings are generally less than 15 tons per acre.

Stand Growth and Vegetative Health

The Forest Plan provides direction on the growth of timber stands (Forest Plan, pages IV-50 to IV-69). The Plan stresses density management, or commercial thinning to promote stand growth and health. Though Forest Plan direction is somewhat contrary to purely historic conditions, especially in the lethal fire regime (stands become quite dense before they burn), density management is essential to providing wood products and to avoid conditions that would promote wildfire and insect and disease outbreaks. Stand growth is a good indicator of stand health. If individual trees within a stand are growing well the stand is most likely healthy. Healthy stands tend to avoid the sudden changes in forest vegetation caused by wildfire and insects and disease that would eventually occur in unhealthy stands.

The desired condition is to have stands that are healthy and growing vigorously to near site potential (Forest Plan goal, page IV-50). Stands with negative growth where mortality exceeds growth (strata 23 and 24), due to old age and high densities, are converted to young vigorous stands of Douglas-fir, western larch, lodgepole pine, and ponderosa pine where stand densities are managed to maintain growth and health. Stands with growth below site potential (strata 34 and 35) are either thinned or converted to young stands that have the same species composition and density management as mentioned above. Stands with poor stocking and/or undesirable species composition (strata 21, 22 and 26) are treated and regenerated to young stands of the species composition mentioned above. Stocking levels of crop trees at the fifth year after regeneration would range from 250 to 335 trees per acre.

Past Actions That Have Affected the Current Condition

During recent times (the last 60 years), vegetation in the planning area has been primarily influenced by fire exclusion and timber harvest. Prior to that, vegetation characteristics and conditions were influenced by natural events.

Timber harvest has occurred on an estimated 1,406 acres within the planning area during the last 40 years. This harvest has created varying levels of openings in the forest canopy, from clearcuts on an estimated 505 acres (strata 20 and 32), to partial cuts on about 506 acres (stratum 21) with canopy closures of residual mature trees of less than 50 percent, to partial cuts on an estimated 395 (stratum 22) acres with canopy closures of residual mature trees greater than 50 percent. Where timber harvest has occurred and the forest canopy was sufficiently opened up, early seral species (ponderosa pine, Douglas-fir, lodgepole pine, and western larch) are now growing in even-aged stands. In clearcuts, no remnant overstory occurs as it did historically; however, much of the past timber harvest in this area was in partial

cuts. In some of the partial cuts with less than 50 percent canopy closure and in all of the partial cuts with greater than 50 percent canopy closure, grand fir is regenerating to the exclusion of other species. Slash created from these past harvest entries was treated through piling and burning or broadcast burning. Minimal amounts were left untreated.

Current Condition

Forest Structure

Forest structure is the amount of open, young, mid-aged/mature and old forest within the planning area. Comparing the current condition of forest structure with the desired condition helps determine the areas that are available for treatment. The current condition VSS and desired condition VSS are shown in Table 3-11 below.

Table 3-11. Percent of Vegetative Structural Stages (VSS) in the Planning Area

Vegetative Structural Stage (VSS)	Desired Condition	Current Condition
Open	10-20	4
Young Forest	20-30	20
Mid-aged to Mature Forest	40	43
Old Forest	20	33

The following strata represent the various VSS:

- open - strata 29, 41, 42, 70, and 20 and 21 when they are less than 10 years old.
- young forest - strata 30, 32, and 20 and 21 when they are greater than 10 years old.
- mid-aged and mature forest - strata 22, 33, 34, and 35.
- old forest* - strata 23, 24, 25, 26 , and 41 and 42 in working groups 7, 8, and 9.

* Old forest is not the same as old growth. Old growth is defined on page 3-20, in the Wildlife section of this chapter.

See strata and working group definitions in Appendix E. See Figure 3-3 for strata locations and Figure 3-4 for working groups.

Stand Characteristics and Conditions (Historic Norms)

The following main habitat types occur within the planning area: grand fir/blue huckleberry, grand fir/mountain maple, and grand fir/Queencup Beadlily. These habitat types are common in historic mixed severity and lethal fire regimes. Elevations range from 5,400 to 6,500 feet.

There are presently no epidemic occurrences of insects and disease within the planning area. Because of species composition the most likely and future occurrences would be western spruce budworm, Indian paint fungus, western gall rust, and Engelmann spruce beetle. Existing fuel loading ranges from 6 to 26 tons per acre within the planning area.

During the period of the last major fire in this area, approximately 100 years ago, conditions were such that an abundance of grand fir regenerated leaving a sparse overstory of mainly Douglas-fir, ponderosa pine, and grand fir. This probably is a higher percentage of understory grand fir than existed over a longer historical record. When comparing similar areas at this elevation, one would expect more Douglas-fir, ponderosa pine, and western larch in the understory.

There are 3,347 acres, or 67 percent of forested land, within the planning area in the mixed conifer working group, which includes mainly the cool moist grand fir habitat types. This corresponds to the historic mixed severity fire regime. The historic non-lethal fire regime is lumped in with the mixed severity fire regime due to the small area that it represents and because these small islands of non-lethal regimes probably behaved more like mixed severity fire regimes (fire had to come from adjacent moister sites unless each of these small islands got a direct lightning strike, which is unlikely). The remainder of the area, 1,673 acres or 33 percent of the forested land, is made up of the subalpine fir, lodgepole pine, and Engelmann spruce working groups. This corresponds to the historic lethal fire regime. Figure 3-5 shows how these two historic fire regimes are distributed across the planning area.

In areas not previously treated by timber harvest (3,435 acres of strata 23, 24, 25, 33, 34, and 35, or 71 percent of the suitable forested land), fire exclusion has allowed stand characteristics and conditions to reach the upper limits of historic norms, or in some cases, has allowed departures from historic norms. Stand structure, species composition, stand density, insects and disease occurrence, fuel loading and potential fire severity are now at the upper limits of historic norms, with some departures from historic, especially in the lodgepole pine cover type. That is, 100 years ago, if these conditions existed, a wildfire could have occurred at any time that would have replaced these older stands with younger ones.

In areas previously treated by timber harvest with a residual stand remaining (1,406 acres of strata 21, 22, 31, and 32, or 29 percent of the suitable forested land), a greater amount of grand fir is regenerating in these partially cut stands than regenerated historically because of excessive shade. Though fuels have been treated in these former harvest units, excessive, fire-intolerant grand fir in the understory creates increased susceptibility to crown fires, thus potentially greater tree mortality during fire events.

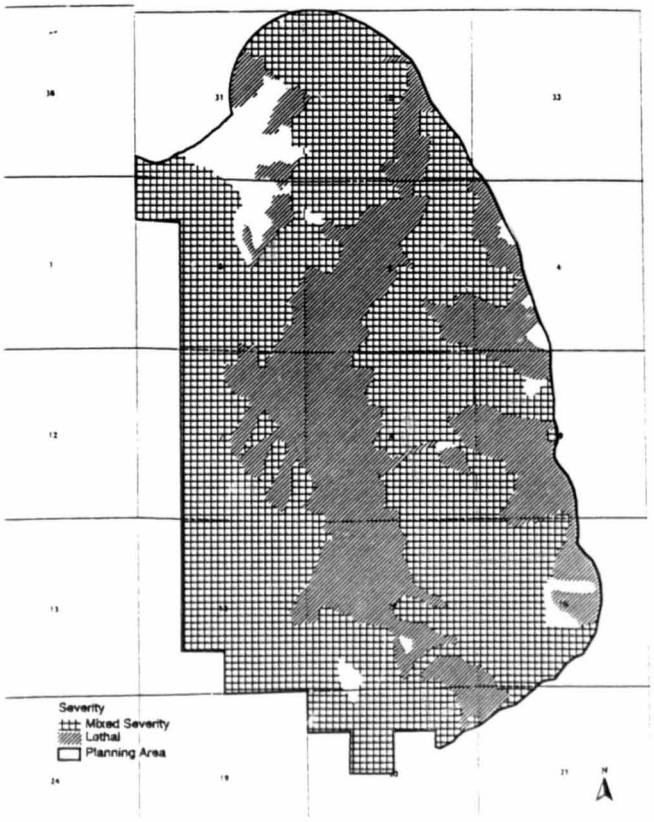
Stand Growth and Vegetative Health

Strata 23, 24, 33, 34, and 35 have slow growth and high mortality related to age, density, and insects and disease. These are areas that have not been treated in the past. Forest inventory data summaries show current growth in strata 23 and 24 to be negative; that is, mortality exceeds growth. In strata 33, 34 and 35, growth is below site potential. Refer to Payette Intensive Forest Inventory for these strata for current growth (also see project record)

Direct and Indirect Effects of the Alternatives

The following categories were used to determine the need for the proposal as well as to address the effects to vegetation. Forest Structure was used to determine how much should/could be treated across the planning area. Since the amount of mid-aged/mature and old forest that currently exists, 76 percent, exceeds the desired amount of 60 percent, the difference could/should be moved to the open category in order to sustain the desired structural stages over time. Historic Norm concepts were used to determine

Figure 3-5. Historic Fire Regimes in the Planning Area



how individual stands should be treated in order to replicate historic conditions. Growth and Health was used to refine silvicultural prescriptions so treatments would more closely meet Forest Plan objectives while still being within historic norms (for example, timely planting and thinning to enhance growth).

The indicators under each of these categories are: Forest Structure - the change in percent of VSS; Stand Characteristics and Conditions (Historic Norms) - acres of improved stand structure, acres of improved species composition, acres of improved stand density, acres of reduced fuel loading, acres of reduced insect and disease occurrence and impact, and acres of reduced potential for wildfire outside of historic norms; and Stand Growth and Health - acres of improved stand growth and health.

Forest Structure

The following table shows the difference between the desired condition and the alternatives in terms of percent of the project area by VSS class.

Table 3-12. Percent VSS Class By Alternative Within the Project Area

VSS Class	Desired Condition	Alternative I	Alternative II	Alternative III
Openings	10-20	4	10	8
Young Forest	20-30	20	20	20
Mid-aged to Mature Forest	40	43	41	40
Old Forest	20	33	29	32

Alternative I (No Action) - There would be no change in the current condition. Forest structure would continue to be mainly mid-age to mature and old forest, with little open forest. This would not create or sustain the desired forest structure in the long term. Mature and old forest stages would gradually increase over time until a disturbance event (wildfire or future proposed prescribed fire or timber harvest) converts these older stands to openings.

Alternatives II and III - These alternatives would move forest structure closer to the desired condition and would help sustain a balance of VSS in the long term. Alternative II would convert 264 acres of mature and old forest to openings and alternative III would convert 153 acres.

Stand Characteristics and Conditions (Historic Norms)

Alternative I - This alternative would not meet the Desired Condition or the Purpose and Need for this proposal. Stand characteristics and conditions would depart from historic norms, with departures increasing as time goes on, until some form of disturbance occurs -- wildfire, prescribed fire, or timber harvest.

In strata 23, 24, 34, and 35, stand densities and fuel loadings would continue to increase with the associated risk of wildfire. Stand structure would become more irregular instead of even-aged or storied. The percentage of shade tolerant grand fir would continue to be greater than was historically present. If allowed to continue indefinitely, a lack of a seed source for western larch, Douglas-fir and ponderosa

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pine would prevent regeneration of these species unless done artificially (planted). Western larch is currently on its way out. The activity and impact of insects and disease would continue to increase due to increasing age and stand density. As time goes on when wildfire does occur fire severity could be outside of historic norms with the potential to cause resource damage.

In strata 21 and 22, a greater proportion of grand fir would continue to regenerate and grow and would eventually make up most of the stand where historically there was more large western larch, Douglas-fir, and ponderosa pine. Departure from historic species composition has already occurred, due to past timber harvest, as many of the more valuable western larch, Douglas-fir and ponderosa pine were removed when these stands were harvested years ago.

Alternatives II and III - These alternatives would move toward the desired condition and meet the Purpose and Need for this proposal by:

- improving species composition by natural regeneration and planting of early seral species (ponderosa pine, Douglas-fir, and western larch);
- improving stand structure by maintaining historic even-aged and storied (2 ages) stand conditions that mimic mixed severity and lethal fire regimes;
- reducing fuel loading by reducing existing fuels and managing activity fuels to Forest Plan standards;
- reducing stand density by reducing stand age and/or number of trees per acre;
- reducing the potential for future insect and disease activity and impacts by enhancing growth and vigor of stands; and
- reducing the potential for wildfire that is outside of historic norms.

Alternative II would convert an estimated 264 acres of (strata 23, 24, 34, and 35) mature and old forest to young forest of mainly early seral species (ponderosa pine, Douglas-fir, lodgepole pine, and western larch). This alternative would also treat 26 acres of previously treated stands (strata 21, 22, and 26) to increase stocking and improve species composition by planting early seral species, ponderosa pine, Douglas-fir and western larch.

Alternative III would convert an estimated 153 acres of mature and old forest (strata 23, 24, 34, and 35) to young forest (ponderosa pine, Douglas-fir, lodgepole pine, and western larch) and treat 26 acres of previously treated stands (strata 21, 22 and 26) for the same reasons as Alternative II.

For stands treated, Alternatives II and III would mimic the vegetative effects of historic wildfire. The Even Age Regeneration prescription would retain an overstory of western larch, ponderosa pine, Douglas-fir, and grand fir and would ensure a larger percentage of early seral species in the understory -- mainly ponderosa pine, Douglas-fir, and western larch. The Free Selection prescription, used only in units 521 and 721, would maintain and enhance the multi-storied conditions already present. Stand density, fuel loading, insect and disease activity, and the risk of large, stand-replacing wildfire would all be reduced on these acres. Table 3-13 displays acres treated to move or maintain the area within historic norms for these conditions.

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Table 3-13. Acres of Improved Stand Characteristics and Conditions

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Species Composition	0	290	179
Acres of Improved Stand Structure	0	290	179
Acres of Improved Stand Density	0	290	179
Acres of Reduced Insect and Disease Activity	0	290	179
Acres of Reduced Fuel Loading	0	290	179
Acres of Reduced Potential for Wildfire Outside of Historic Norms	0	290	179

Stand Growth and Vegetative Health

Alternative I - This alternative would not move toward the desired condition or meet the Purpose and Need for this proposal. Within strata 23, 24, 34, and 35, growth would continue to decline as age, density, and mortality increases (see discussion above). Within stratum 21, stocking would continue to be low, and in strata 22 and 26, excessive amounts of grand fir would occur in both the overstory and understory. In both cases, stands would not be growing to near site potential or growing the desired species (see Current Condition). This would affect current and future yields of wood products.

Alternatives II and III - These alternatives would move toward the desired condition and meet the Purpose and Need for this proposal within the constraints of forest structure objectives. Alternative II would treat 264 acres of strata 23, 24, 34, and 35 (previously untreated), and Alternative III would treat 153 acres. Most of these acres would turn old forest into young forest that would be healthy and vigorous. Alternative II and III would treat 26 acres of previously treated areas – strata 21, 22, and 26 – to improve stocking and composition. These treatments would improve growth and allow these stands to come closer to meeting Forest Plan growth and yield objectives. Refer to Forest Plan Growth Assumptions in the project record. Growth within these areas would then approach site potential. See Table 3-14 below.

Table 3-14. Acres of Improved Vegetative Growth and Health by Alternative

Indicator	Alternative I	Alternative II	Alternative III
Acres of Improved Growth and Health	0	290	179

Cumulative Effects

The VSS for the cumulative effects area is used to show whether a sustainable forest structure exists over a landscape larger than the project area. If current and future conditions (percentages of open, young, mature and old forest) approach the desired condition, then all elements of a functioning ecosystem,

goshawk included, should be provided for (Reynolds et al., 1992). The cumulative effects area takes in much high elevation lands that are mainly strata 41, 42, and 70. These strata rarely change and are always in the open condition, the reason for the high percentage in the open condition.

Past Actions

Timber harvest has occurred on an estimated 5,281 acres within the cumulative effects area during the last 30 years. This harvest has created varying levels of openings in the forest canopy, from clearcuts and plantations on an estimated 908 acres (strata 20 and 32 respectively), to partial cuts on about 1,142 acres (stratum 21) with canopy closures of residual mature trees of less than 50 percent, to partial cuts on an estimated 3,231 acres with canopy closures of residual mature trees greater than 50 percent. Where timber harvest has occurred and the forest canopy was sufficiently opened up, early seral species (ponderosa pine, Douglas-fir, lodgepole pine, and western larch) are now growing in even-aged stands. In clearcuts no remnant overstory occurs as it did historically, however, much of the past timber harvest was in partial cuts. In some of the partial cuts with less than 50 percent canopy closure and in all of the partial cuts with greater than 50 percent canopy closure, grand fir is regenerating to the exclusion of other species.

Table 3-15. Percent of VSS in the Cumulative Effects Area from Past Actions

Vegetative Structural Stage (VSS)	Desired Condition	Current Condition with Strata 41, 42, and 70
Open	10-20	20
Young Forest	20-30	12
Mid-aged to Mature Forest	40	46
Old Forest	20	22

Future Actions

There are no other proposed vegetation management projects within the cumulative effects area in the foreseeable future except for the Fourmile Timber Sale (1998). These units should be harvested in the near future. The effects of this sale on VSS percentages are shown in Table 3-16. The silvicultural prescriptions would be within historic norms, and growth and health of treated stands in the Fourmile Timber Sale would be improved. (This table includes the proposal.)

Table 3-16. Percent of VSS in the Cumulative Effects Area from Present and Future Actions

Vegetative Structural Stage (VSS)	Desired Condition	Current Condition with Strata 41, 42, and 70
Open	10-20	24
Young Forest	20-30	12
Mid-aged to Mature Forest	40	43
Old Forest	20	21

Irreversible and Irretrievable Commitments

Alternatives II and III would improve growth in treated stands and move them toward their site potential. Slow growth and mortality would continue in Alternative I. Potential timber growth and yield would be lost for an undetermined period of time.

Roads, permanent skid trails, and landings are an irretrievable commitment of these areas from timber production. No alternative would build new roads or permanent skid trails. Landings would be returned to productivity. Alternatives II and III would obliterate and return nearly 4 miles of existing road to productivity. Alternative I would not.

Future high intensity, lethal fires would occur at some time in the future as a result of fire exclusion and/or the lack of fuel treatment. The timber resource could be temporarily affected taking decades to return. Wildfires, including escaped prescribed burns, cannot be totally avoided. The Action Alternatives would reduce the risk of high intensity wildfire in the future.

Forest Plan Consistency

Alternatives II and III are consistent with Forest Plan direction for timber management, as treated stands are suitable for timber production and would grow to near site potential. Alternative I is not consistent with Forest Plan direction for timber management, as no slow growing stands would be treated so that they would grow to near site potential at this time.

The prescribed burning described in the Action Alternatives would meet the Forest Plan direction of decreasing overall fuel accumulations in intensively managed timber stands. In areas of light fuel loads, lopping and scattering or not treating slash may be adequate. In other harvest areas, prescribed burns would reduce the natural and activity fuels to low risk levels.

ROADLESS CHARACTER AND WILDERNESS POTENTIAL

Scope of the Analysis

For the roadless/wilderness resource, the area that may be directly or indirectly affected is the project area. The area that may be cumulatively affected is the Patrick Butte Roadless Area (see Figure 3-6).

Desired Condition

The Forest Plan does not state a desired future condition for roadless character. The Forest Plan does not have a section entitled "roadless" and does not provide direction for the roadless resource. However, it does make land allocations and gives Management Area direction that crosses roadless area boundaries. A roadless area is an inventory classification, not a management category. The Forest Plan allocated the project area to general forest management, including timber harvest and associated activities.

Past Actions That Have Affected The Current Condition

RARE I and II

National Forest roadless areas have been analyzed for wilderness and other resource potential a number of times in past decades by the Forest Service and Congress. In 1972, the Forest Service conducted the first Roadless Area Review and Evaluation (RARE I). In 1979, the Forest Service completed the second Roadless Area Review and Evaluation (RARE II) and published a final environmental impact statement recommending areas for wilderness, non-wilderness, and further planning. The State of California and others challenged RARE II as insufficient to support non-wilderness allocations, and the Ninth Circuit Court of Appeals ruled it legally inadequate. The Forest Service then amended the Forest Planning process to include a roadless area reevaluation, leading to a land allocation of each roadless area to either wilderness or non-wilderness. The French Creek/Patrick Butte Roadless Area was analyzed in RARE I and in RARE II (code #4-461) and reevaluated in the Forest Plan EIS (code #12002).

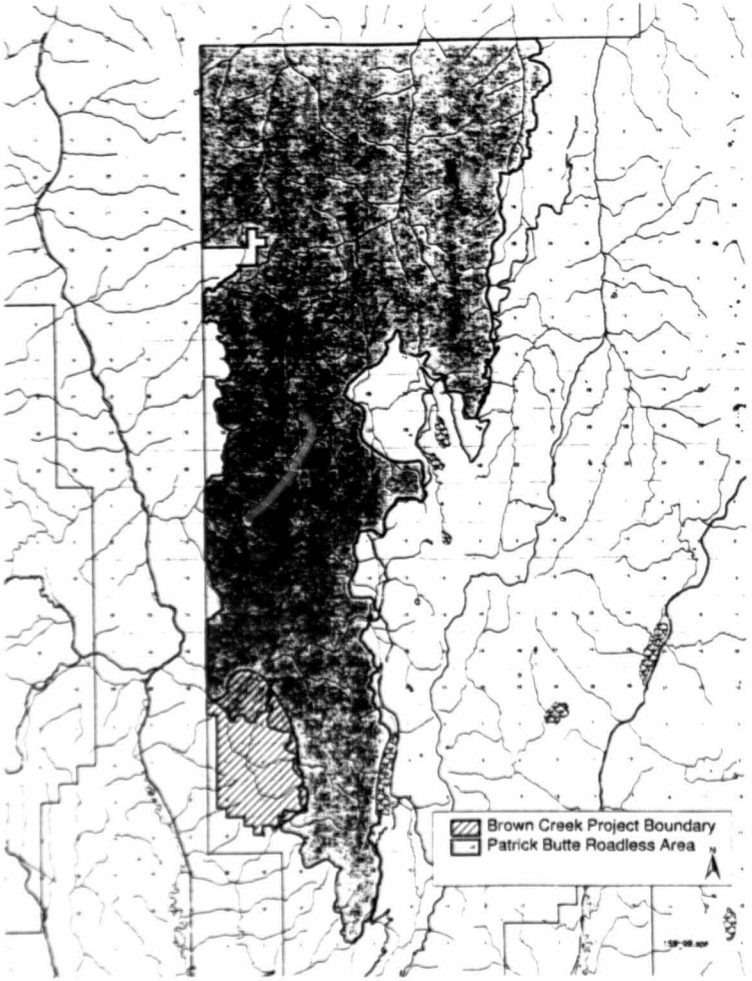
Forest Plan

In 1988, the Forest Plan FEIS analyzed the 171,575 acre inventoried French Creek/Patrick Butte Roadless Area, of which 3,360 acres were on non-federal land. The Forest Plan did not recommend any of the roadless area for wilderness status, but made land management allocations for the Payette National Forest portion of the area (see Appendix C, Roadless Area Evaluation, of the Forest Plan FEIS).

Between 1988 and 1994, timber sales on the edges of the French Creek/Patrick Butte Roadless Area developed and indefinitely removed several thousand acres from wilderness eligibility. The most recent of these sales was the Accelerated Spruce Salvage Sales in 1992 (Hendricks Creek, Brush Creek, and Copet Creek). Following these sales, and boundary adjustments made in 1989 and 1993, the remaining roadless acres in the French Creek/Patrick Butte Roadless Area were estimated at 161,936.

In 1994, the Corral Fire burned nearly 65,000 acres in the roadless area. Although the fire itself did not affect the roadless character of the area, the Payette National Forest proposed four salvage sales that entered the roadless area to recover some of the economic value of timber affected by the fire. The No

Figure 3-6. The Patrick Butte Roadless Area and The Brown Creek Project Area



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Action Alternative was chosen for one of these sales, French Creek Salvage, because the sale was not economical. The other three sales were sold in 1996, and most units in these sales were harvested in 1996 and 1997.

These sales have indefinitely removed an estimated 4,566 acres from wilderness consideration over the long term (50+ years) due to direct and indirect effects from harvest-related activities. In addition, the Lower Elkhorn sale developed a narrow bridge of land that connected the French Creek and Patrick Butte portions of the roadless area. Thus, two smaller and separate areas now exist, the French Creek Roadless Area, and the Patrick Butte Roadless Area. The Brown Creek sale would only affect the Patrick Butte Roadless Area.

In 1999, the Forest adjusted the French Creek and Patrick Butte Roadless Area Boundaries using the protocol developed for the Forest Plan Revision. The net result of the boundary adjustments following the protocol, was an *increase* in roadless acres to the current 169,424 acres, due in part to past timber sales and a more accurate determination of acreages using GIS. The new boundary is used to determine effects to the Patrick Butte area. The French Creek Roadless Area is now 88,780 acres, and the Patrick Butte Roadless Area is now 80,644 acres.

Current Condition

The issue involves the effects of timber harvesting on the roadless character and wilderness potential of the project area and the Patrick Butte Roadless Area. The issue is important to many people who want roadless areas kept roadless and unmanaged, or to be recommended for wilderness. It is equally important to others who want them developed, managed, and made accessible and usable to the general public. The issue is important to the Forest Service because National Forest roadless areas have been a national controversy for more than two decades. Management of roadless areas is complicated when there is no public consensus on their land use allocation.

The Chief of the Forest Service, in March of 1999, directed the agency to adopt a temporary suspension of road construction and reconstruction in unroaded areas. This project conforms to this directive, in that no new road construction or reconstruction will take place in the roadless area. Additionally, the President has put forth an initiative dealing with management of roadless areas. A DEIS has been issued by the agency that will eventually determine if, how, or when entry into roadless areas will proceed in the future.

The indicators come directly from the Wilderness Act and are the same measures used by the Forest Service (and to a degree, Congress) to analyze a roadless area's eligibility for wilderness. The indicators thus portray an area's condition for potential wilderness and the effects of a development alternative on that condition.

Roadless Character

The term "roadless character" refers to an area of at least 5,000 acres, without developed and maintained roads, and is substantially natural. Roadless areas have varying degrees of wilderness characteristics. Wilderness is specifically defined in the Wilderness Act of 1964 (Public Law 88-577); one requirement is roadless, undeveloped condition. Roadless condition can be, and is viewed by some, as a resource worth protecting in its own right.

As mentioned above, there has been strong disagreement about future management for this roadless area; some want it preserved for wilderness, and others want it managed for commodity production. During

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RARE II, the vast majority of public comments on this area favored wilderness designation. During the 1983 roadless area reevaluation, this area was in the top five areas for public comment and support for wilderness. Several Idaho wilderness proposals since the Forest Plan have included the French Creek/Patrick Butte Roadless Area. Comments on the Forest Plan also indicated broad support for keeping the area roadless for its watershed, fisheries, recreation, big game and other wildlife, and non-motorized recreation uses.

Although the French Creek/Patrick Butte Roadless Area was not recommended for wilderness in the Forest Plan, the French Creek and Patrick Butte Roadless Areas still possess a roadless condition and still meet the basic criteria for potential wilderness. Project planning, such as this FEIS, need not analyze a wilderness alternative for roadless areas allocated to non-wilderness in the Forest Plan. However, project planning must analyze site-specific impacts on the roadless condition and wilderness potential.

A number of Idaho wilderness bills have been proposed in the last ten years that included the French Creek/Patrick Butte Roadless Area; however, none of these proposed bills have been enacted. Currently, HR 488, the Northern Rockies Ecosystem Protection Act is under consideration in Congress. The Patrick Butte Roadless Area is included in this bill as a potential new wilderness area.

Wilderness Attributes

The Forest Plan FEIS, Appendix C, analyzed wilderness potential in terms of eight wilderness attributes in the 1964 Wilderness Act. The first four are required attributes:

1. Natural integrity
2. Natural appearance
3. Opportunity for solitude
4. Opportunity for primitive recreation.

The second four are supplementary attributes (special features):

1. Outstanding ecological features
2. Outstanding geological features
3. Outstanding scenic features
4. Outstanding historic/cultural features.

The discussion below is organized by the four required attributes, plus special features.

Brown Creek Project Area

The project area is an estimated 5,219 acres, of which 3,770 are roaded. The 1,449 roadless acres are located mostly in the northern portion of the project area (see Figure 3-6) and comprise about 1.7 percent of the entire Patrick Butte Roadless Area. The discussion below refers only to the roadless portion of the project area.

Natural Appearance - The roadless portion of the project area appears mostly natural. Livestock grazing has had visible effects in localized areas but is not prominent overall. One trail (#166) leads to the top of Bally Mountain in part of the roadless area, and another trail (#164) follows Brown Creek for a short distance. Recreational use of these trails is currently low. Distant views to the south and west reveal the developed Meadows Valley, and some middleground views show nearby clearcut blocks and logging roads, but they lie outside of the roadless area.

Natural Integrity - The area s natural integrity is moderate. Fire exclusion has allowed forest succession to move toward climax stages and shade-tolerant species in most places. Some patches of large trees are dead or dying from recent insect or disease activity. Sounds of logging equipment and other machinery are sometimes audible in summer and fall within the roadless area. Sights and sounds of pickup trucks are common in the fall woodcutting and hunting seasons.

Opportunities for Solitude - The roadless portion is relatively small, has moderate-to-steep topography, has mostly continuous tree cover, is moderately easy to reach, and has two short trail segments. These factors make the opportunities for solitude moderate. In conjunction with the contiguous roadless acreage to the northeast, however, solitude opportunities increase. The noises of motorized equipment and traffic to the west and south may detract from the solitude for some people. Vehicles can be seen and heard, and their dust clouds are visible along dirt roads.

Opportunities for Primitive Recreation - The opportunities for primitive outdoor recreation are moderate. The existing topography, creeks, vegetation patterns, and wildlife combine to offer some opportunities for primitive uses: hunting, hiking, horse riding, photography, gathering forest products, and nature study. The area is fairly near New Meadows and accessible by high-clearance 2-wheel drive vehicles. The area is not a recreation destination, but the Brown Creek Trail provides access to more roadless country to the north. Big game and smaller species offer some opportunities for wildlife hunting and viewing.

Special Features - The area has no unique ecological, geological, historical, or cultural features. However, the view from the top of Bally Mountain is very scenic, particularly into the roadless area to the north.

Direct and Indirect Effects of the Alternatives

This section describes effects on roadless character and wilderness potential in two ways. The first way is objective, quantifying acres roaded and developed, and therefore made unsuited for future wilderness consideration. The second way is narrative, in respect to the five types of wilderness attributes described above and listed as indicators. About 28 percent of the Brown Creek project area is roadless. All discussion of effects on roadless character and wilderness potential below refers only to the roadless portions.

In all alternatives, other approved activities can and would continue, including permitted livestock grazing, hunting, motorbike use, and other dispersed recreation. No alternative would construct or reconstruct roads within the roadless area, thus meeting Forest Service interim roads policy direction issued in early 1999.

Acres Eligible for Future Wilderness Consideration

Alternatives I and III would not develop any of the 1,449 roadless acres. Thus, they would have no long-term direct effects on roadless character or wilderness potential. An estimated 80,644 acres would remain eligible for wilderness in the roadless area. The only exception would be the short-term (1 to 5 years) indirect effects of nearby harvest-related sights and sounds during the sale in Alternative III. However, these effects would not have any impact on the future wilderness potential of the area.

Alternative II would have seven helicopter harvest units (408, 410, 417, 430, 609, 911, 913) in the roadless portion of the project area. An estimated 105 acres would be directly affected by harvest-related activities such as tree felling, helicopter yarding, slash piling and burning, and reforestation. A total

vicinity of about 235 acres would be deleted from the 1,449 roadless acres due to direct and indirect effects. This represents 0.3 percent of the Patrick Butte Roadless Area. An estimated 80,409 acres would still be eligible for wilderness in the roadless area.

Directly, timber harvesting would change biological aspects of the land -- mostly vegetation and wildlife habitat. The modified setting would heighten the sensation of being in a developed area. The character of the landscape (the recreation setting) would change because of the audible (short-term) and visual (long-term) reminders of human development. Visitors seeking a primitive experience may choose not to visit this area; visitors seeking a modified setting may increase. The Forest Service would consider the area developed and would delete it from the inventoried roadless area.

The activities would also have indirect effects in the vicinity of development. The sights and sounds of logging would be noticed some distance outside the harvest units within the boundary of the roadless area during the sale. After the sale, the sounds of logging would no longer be apparent, but the openings in Unit 913 would be seen, particularly from Trail 166.

Both the direct and indirect effects would make it unlikely that Congress would further consider the affected area for inclusion into the National Wilderness Preservation System. Development essentially disqualifies that portion of the roadless area from future wilderness consideration for the foreseeable future.

Manageability - Manageability is an element of wilderness potential. Alternatives I and III would have no effect on the degree to which the remaining roadless area could be managed as wilderness. Alternative II would reduce the size of the potential wilderness commensurate with the acreage affected. The new roadless area boundary would follow the affected area's north and west boundary, as shown in Figure 3-7.

Wilderness Attributes

Existing activities would continue under **Alternative I**. The present levels of *natural appearance* and *natural integrity, opportunities for solitude*, and *opportunities for primitive recreation* would continue, affected mainly by natural processes.

Alternative II would not enter the roadless area with roads or skid trails, but would place seven helicopter harvest units in the area. These units would affect *natural appearance* and *integrity* with skinned trees, flagging, tree paint, stumps, and logging slash. Most of these effects would become negligible within 20 to 30 years, but *opportunities for solitude and primitive recreation* within and near these units would be lost for that period.

This alternative would also affect the scenic view from the top of Bally Mountain (*special feature*). Harvest activities (chainsaw noise, helicopter flights...) in and around Units 911 and 913 would be apparent from the top of Bally Mountain during the sale. Both during and after the sale, however, the treatments in these units would be visually screened from the top of Bally Mountain by vegetation and the steep topography. Other EAR units both inside and outside the roadless area and across Brown Creek to the east would be visible in the distance (1-2 miles) for many years. These units would add to the existing mosaic of natural and human-made openings and even-aged vegetation patches on the west side of Granite Mountain.

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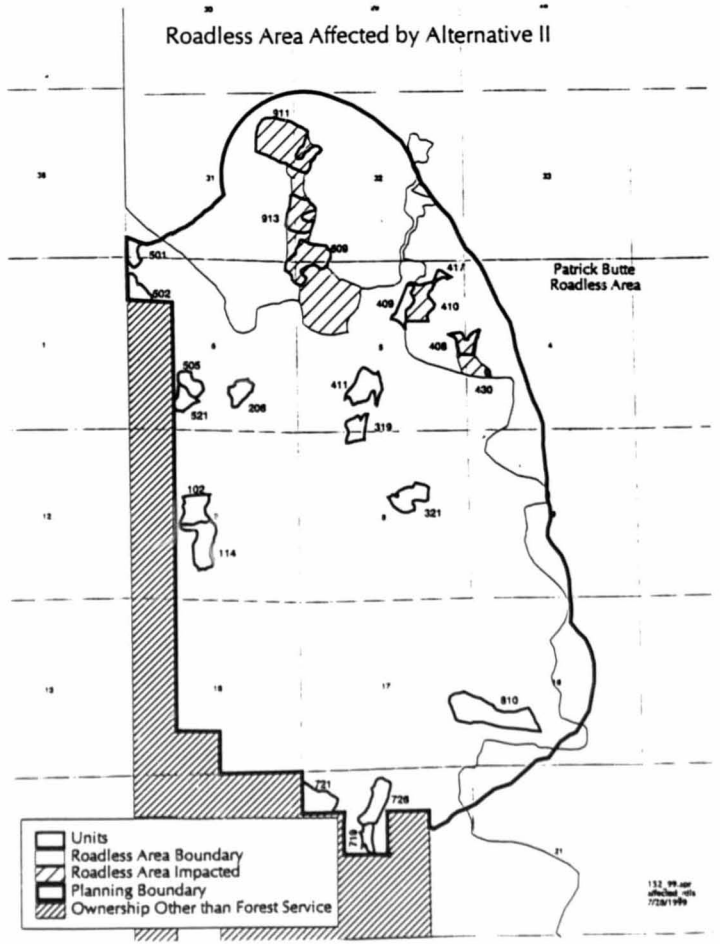
Figure 3-7. Roadless Area Affected by Alternative II



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As with Alternative I, No Action, **Alternative III** would not enter the roadless portion of the project area. Therefore, there would be no direct effects of development on *natural appearance, natural integrity, opportunities for solitude,* or *opportunities for primitive recreation.* The only exception would be the short-term (1 to 5 years) indirect effects of nearby harvest-related sights and sounds during the sale.

Table 3-17. Roadless Consequences by Alternative

Indicator	Alt. I	Alt. II	Alt. III
Acres Developed and Indefinitely Removed from Wilderness Consideration:			
Inside Project area (direct and indirect effects)	0	235	0
Percent of Patrick Butte Roadless Area Affected	0	0.3	0
Acres Remaining Roadless and Eligible for Future Wilderness Consideration:			
In Project area	1,449	1,214	1,449
In Roadless Area	80,644	80,409	80,644

Table 3-17 shows the acres and percent of the roadless area that would be removed from, and acres remaining eligible for, future wilderness consideration, for each alternative. Figure 3-7 illustrates the developed area for Alternative II.

Cumulative Effects

Past and Ongoing Actions

See the *Past Actions That Have Affected The Current Condition* section for a description of actions that have affected the roadless area since 1988. In 1999, the Forest adjusted the French Creek and Patrick Butte Roadless Area boundaries using the protocol developed for the Forest Plan Revision. The net result of boundary adjustments following the protocol was an *increase* in roadless acres to current area of 169,424 acres. The new boundary is used to determine effects to the Patrick Butte Roadless Area. The French Creek Roadless Area is now 88,780 acres, and the Patrick Butte Roadless Area is now 80,644 acres.

Proposed Actions

The Payette National Forest is currently proposing two green timber sales that could occur partially or wholly within the Patrick Butte Roadless Area boundary. One of these green timber sales, Fourmile, has already been sold. At this time, implementation of this sale is awaiting a District Court decision. These sales, and the roadless acres they would directly and indirectly develop, are listed in the Table 3-18, below.

Table 3-18. Patrick Butte Roadless Area Acres Affected from Proposed Timber Sales

Proposed Sale Name	Acres Developed in the Roadless Area	Road Miles Built in the Roadless Area
Fourmile (1998)	397	0
Brown Creek (2000)	235	0
Total	632	0

The two proposed sales (Fourmile and Brown Creek) would affect, at most, an estimated total of 632 acres, or a little less than 1 percent of the roadless area. These acres represent the direct and indirect effects of harvest treatments; they are not actual harvest acres.

The main impacts to roadless character and wilderness potential would be the visual reminders of timber harvest: openings, stumps, and slash. The preferred alternatives for the sales would not build any new roads into the roadless portions of the sale areas. Treatments would range from salvage and thinning to even-aged openings, depending on stand conditions and composition. Some prescribed fire would also occur.

Irreversible and Irretrievable Commitments

Development of the roadless area under Alternative II would be an irretrievable commitment of the roadless resource to non-wilderness condition. Developed portions of the project area would be disqualified from future wilderness consideration for the foreseeable future. However, the signs of stumps, slash, and created openings in Alternative II would gradually blend into the existing landscape over the next few decades, and therefore this commitment would not be irreversible.

Forest Plan Consistency

The Forest Plan allocates the project area to general forest management, including roading and timber harvest. Because Alternative II moves toward this desired condition, it can be seen as more consistent with the Forest Plan. The alternatives that retain roadless and undeveloped area (Alternatives I and III) make no progress toward the desired condition. However, the Forest Plan allows, but does not mandate, development.

Other Disclosures

This section contains disclosures of effects that are required by federal law, regulation, or policy.

Prime Farm Land, Rangeland, and Forest Land

The planning area does not contain prime farmland or rangelands. "Prime" forest land is a term used only for non-federal land, which would not be affected by proposed activities. Regardless of the alternatives selected for implementation, National Forest System lands will be managed with sensitivity to any adjacent private and public lands. All alternatives are in accordance with the Secretary of Agriculture Memorandum 1827 for prime farmland, rangeland, and forest land.

Energy Requirements and Conservation Potential

Alternative II requires the most roadwork and logging, and will have the least potential for conserving energy. In terms of petroleum products, the energy required to implement either action alternative is insignificant when viewed in light of production costs and the effects on the national and worldwide petroleum reserves.

Environmental Justice

The actions under Alternatives II or III would not adversely affect disadvantaged or minority groups because of the planning area's distance from large population centers and the diffuse level of adverse impacts on any social group. A timber sale such as this proposal would not produce hazardous waste or conditions that might affect human populations.

Wetlands and Flood Plains

No wetlands or flood plains would be filled under any alternative. Alternatives II and III would improve some road crossings of streams to reduce long-term sediment production and delivery. These activities are permitted under the Corps of Engineers Nationwide Permits, Section 330.5(a). Because no drainage of wetlands would occur and no wetlands or flood plains would be altered, the goal and intent of Executive Orders 11988 (Flood plain Management) and 11990 (Protection of Wetlands) would be met. This is documented in Chapter 3, Soil Productivity and Water Resources sections.

Unavoidable Adverse Environmental Impacts

Proposed activities would likely produce unavoidable adverse effects on some components of the environment. Actions that benefit one component can have at least temporary adverse effects on another. A reasonable range of alternatives has been considered, and the alternatives include management requirements and mitigation measures to avoid or reduce adverse environmental impacts.

Unavoidable adverse impacts are described in detail in Chapter 3. One resource, **roadless character and wilderness potential**, would be affected. About 235 acres of 80,685 total roadless acres would indefinitely be ineligible for wilderness consideration. Natural appearance and integrity of the area would decrease. There would be a short-term loss of solitude and a long-term loss of primitive recreation opportunity.

Short-term Uses of the Human Environment and the Maintenance of Long-term Productivity

Short-term uses are those that generally occur on a yearly basis, such as livestock grazing or timber harvest. Long-term productivity refers to the capability of the land to provide market outputs and amenity values for future decades. The quality of life for future generations depends on the capability of the land to maintain its productivity.

For the Brown Creek proposed project, management requirements and mitigation measures built into the action alternatives ensure that long-term productivity will not be impaired by the application of short-term management practices. For some resources, such as timber and water quality, long-term productivity is expected to increase as a result of the action and required mitigation.

Conflicts with Other Agency Goals and Objectives

Research, interviews, and public involvement with other federal and state agencies indicate there are no other major conflicts between the provisions of the proposed activities and the goals and objectives developed for other governmental agencies.

Chapter 4

Public Involvement

PUBLIC INVOLVEMENT SUMMARY

Public involvement has been an important part of the process of developing this FEIS for the Brown Creek Timber Sale. This FEIS is a revision of the Brown Creek Timber Sale EA that the Payette National Forest released to the public in 1989, and re-released in updated form in 1998. Public input was taken while preparing, and after issuing these two EA's. The Forest Service withdrew the 1998 decision as a result of new information on the roadless area and old growth that came to light through an appeal. Public involvement activities for this project analysis include letters to the public requesting input, this Final EIS, and consultation with other agencies and organizations. Another opportunity for public input was during the March 1999 Federal Register Notice of Intent to prepare this FEIS. In September of 1999, the Forest released a Draft EIS for public comment. A total of 11 comment letters on the DEIS were received. The Interdisciplinary Team used these comments in developing this FEIS. They also responded to the issues contained within these letters. These responses, as well as the comments, are located in this chapter. A detailed account of activities is available in the project planning record.

LIST OF RECIPIENTS

The following is a list of the businesses, agencies, and individuals to whom the Final EIS for the Brown Creek Timber Sale has been sent. This list includes respondents to the Draft EIS, those who requested copies, required agencies, and other involved parties. Additional copies of this document are available by request from the Payette Forest Supervisor's Office in McCall Idaho.

BUSINESSES AND MEDIA

Boise Cascade Corporation
Croman Corporation
Tamarack Mills, LLC: Robert H. Krogh
J.I. Morgan, Inc.: Claus White Jr.
Long Valley Advocate
Rocky Mountain Log Homes: Patrick Connell
Simpson, Thatcher & Bartlett
The Star News

CITY AND COUNTY OFFICIALS/CONGRESSIONAL DELEGATION

Adams County Commissioners
John Hatch, Congressman Mike Crapo
Rep. Twila Hornbeck
Rep. Gertrude Sutton
Rep. Donna Jones
Rep. Helen Chenoweth
Senator Judith Danielson
Senator Mary Hartung
Senator Larry Craig
Adams County Board of County Commissioners
Valley County Board of County Commissioners

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Animal and Plant Health Inspection Service (APHIS)
Agriculture, U.S. Department of:
- Forest Service
  - Director, Environmental Coordination
- General Service Administration, Office of Planning and Analysis
- National Agricultural Library
- Natural Resource Conservation Service

Environmental Protection Agency
Federal Energy Regulatory Commission
Interior, U.S. Department of:
- Bureau of Land Management,
  - Cascade Resource Area Manager
- Office of Environmental Affairs
- U.S. Fish & Wildlife Service

Rural Electrical Administration

ORGANIZATIONS

Alliance for the Wild Rockies
American Lands: Mike Medberry
American Wildlands: Judith Brawer
Boise State University: JYL Hoyt
Colorado State University
Columbia River Inter-Tribal Fish Commission
Defenders of Wildlife: David Zaber
The Ecology Center
Forest Guardians
Idaho Conservation League
Idaho Farm Bureau Federation
Idaho Rivers United
Idaho Sporting Congress
Idaho Wildlife Federation
Nez Perce Tribe: Paul Kucera, Fisheries Dept.
Nez Perce Tribal Executive Committee: Samuel Penney
Northwest Timber Workers
Payette Forest Watch
Payette N.F. Grazing Association: Welden Branch
Shoshone-Bannock Tribes: Arnold Appenay
Shoshone-Paiute Tribes of Duck Valley
The Wilderness Society, Boise

STATE AGENCIES

Idaho Department of Lands (Clearwater Area Office, McCall Area Office)
Idaho Department of Fish & Game
Idaho Department of Water Resources

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Southwest Idaho Division of Environmental Quality

INDIVIDUALS

Ron Hamilton
Erik Ryberg
John Swanson

COMMENTORS TO THE DRAFT EIS

In September 1999, the Payette National Forest released the Brown Creek Timber Sale DEIS. Following a 45-day public comment period, several public agencies, organizations, and individuals submitted comments to the Forest. Each comment letter, listed below by author and in order that is was received, is assigned a number to track it through the review and response process in this Chapter.

List of Commentors

Letter No.	Commentor Name
1	Ron C. Hamilton
2	Northwest Timber Workers (Steve Bliss)
3	Alliance for the Wild Rockies (Don Smith)
4	Idaho Department of Fish and Game
5	United States Environmental Protection Agency
6	John R. Swanson
7	Idaho State Division of Environmental Quality
8	American Lands Alliance (Mike Medberry)
9	Erik Ryberg on behalf of Payette Forest Watch, The Ecology Center, Idaho Sporting Congress and Hells Canyon Preservation Council
10	Idaho Farm Bureau Federation
11	United States Department of Interior

Comments on Access and Roads

Comment from Letter 1: In the document at page 1-5 and 2-4 the miles do not agree. Figure 2-3 has a legend that seems to be very confusing, what roads are to be obliterated and does the work planned agree with the definition found in the glossary of the document.

Response: The miles do agree on pages 1-5 and 2-4. In figure 2-3, page 2-7 in FEIS, there is a mistake in the legend. The second "roads proposed to be closed" should read, " roads proposed to be obliterated". This change will be included in the FEIS. The work planned does agree with the definition in the appendix.

Comments from Letter 2: We feel the ID Team and the USFS have gone overboard in their approach to water quality and we are not in agreement with the closing of 13.8 miles of road and obliterating 3.9 miles.

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Response: The point you raise is a recent concern among many of the public. It was not raised in previous public involvement opportunities for this project (comments on the predecisional EA that are documented in the September 1998 environmental assessment). At that time, there was overwhelming support for the road closures. The main reasons for the closures are:

- To improve fish habitat by reducing sedimentation (as agreed to with National Marine Fisheries Service on the amount of closures and have completed consultation); and
- To improve elk habitat effectiveness (See page 1-9 of the FEIS).

Please review other responses to comments in this section.

Comment from Letter 2: The concerns I have about all the alternatives are the road closures. The roadless areas have become such a big controversy, and hindrance to doing any management activities the potential of closing any roads and then having these areas designated roadless is totally unacceptable.

Response: The roads that will be closed are system roads that would remain on the system and would be open for administrative use. These roads are not within, nor will they be considered in, the roadless area. Obliterated roads may be in the roadless area depending on their location. Roads to be obliterated are short temporary spur roads that were not closed when use was terminated.

Comment from Letter 9: There should be an alternative in this project that looks at the area in terms of what it needs and it would move to fix the stream problems and road problems without adding new ones.

Response: The alternatives need to address the purpose and need of the project. We believe that the Action Alternatives do fix stream and road problems without adding new problems. An alternative that does nothing or only does road reconstruction, road closures, and road obliteration and does not manage the vegetation would not meet the purpose and need (see page 1-5 in FEIS). Also, see a description of the alternatives in Chapter 1 and Chapter 3 for the effects of these actions. There are significant reductions in sediment yields with the action alternatives.

Comment from Letter 9: Will the PNF permit the timber sale administrator to authorize the construction of roads inside PACFISH boundaries or anywhere else? Will he be permitted to build roads and log landings on top of archeological sites?

Response: There is no road construction in any of the alternatives (see Chapter 2 in FEIS for description of alternatives). Please see management requirement on page 2-12 in the DEIS that prohibits harvest in stream corridors and see PACFISH buffer requirements on page 2-10 under Riparian Habitat Conservation Areas. No archeological sites would be affected by any of the alternatives (see page 1-12 in FEIS).

Comment from Letter 9: A discussion of skid roads, temporary roads, and a map indicating where they will be is necessary, given the inclination of the PNF to build unanalyzed "temporary" roads and then leave them on the landscape permanently.

Response: We do not expect to build any temporary roads or skid roads. There are mitigation measures to control location and impact of skid trails on pages 2-15 and 2-17 in the FEIS.

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Comments on Economics

Comment from Letter 3: Indicate that the proposed road graveling, as proposed for Brown Creek, was originally proposed and dropped from the Granite Mountain project for economic reasons. Explain what these economic reasons were.

Response: The price of sawtimber was down at that time; therefore, the sale could not pay for the graveling. There were no other compelling reasons to gravel those roads, such as fish listed under ESA or streams identified as impaired under the Clean Water Act, at that time.

Comment from Letter 3: Indicate cost of road obliteration and how road obliteration will be funded.

Response: The obliteration of 3.9 miles of road is estimated to cost $16,000 or approximately $4,000 per mile. In addition, there are two old wooden culvert stream crossings, where the fill above the wooden culvert would be removed and the streambanks restored and stabilized at an estimated cost of $6,000 or $3,000 at each site.

Funding will be from available K-V funds. If the sale does not generate enough KV funds to accomplish this priority, then appropriate road maintenance or watershed improvement funds will be used.

Comments on Air Quality

Comment from Letter 7: The DEIS indicates that there will be 169 to 265 acres of piles and broadcast burning for slash disposal (page 2-20). Air quality is mentioned briefly on pages ix and 2-14. Page ix indicates that burn prescriptions "will comply with State of Idaho Air Quality Regulations and the Clean Air Act." Page 2-14 cites the Forest Plan, IV-87, for protecting air quality. This is not enough detail for us to analyze if air quality impacts have been adequately addressed in the DEIS. Has meteorology been analyzed to determine the potential for smoke impacts to sensitive areas? For example, the town of New Meadows and Hell's Canyon, a Class I area, are very close to the project area. In addition, good smoke management is still the responsibility of the burner, even if there is compliance with all laws. How will the public be notified of burn plans and what actions will be taken should a smoke intrusion occur?

Response: The Simple Approach Smoke Estimation Model (SASEM) of the Tiered Smoke Air Resource System (TSARS) was used to project smoke impacts to sensitive areas from prescribed burning operations as described in the Brown Creek Timber Sale DEIS. The SASEM program estimates the following:

- maximum ground-level concentration of particulates;
- distance from the fire at which the maximum concentration of particulates occurs;
- range of down-wind distances from the fire over which specified ambient standards for total suspended particulates (TSP) and particulates with a diameter less than 10 micrometers (PM10) would be exceeded; and
- minimum visual range (at the distance of a specified sensitive receptor site) for a variety of meteorological conditions.

The project-sensitive areas and their respective distance and direction from the Brown Creek project area are: New Meadows, Idaho, 9 miles southwest; Pinehurst, Idaho, 12 miles northwest; McCall, Idaho, 19 miles southeast; a western portion of the Frank Church River of No Return

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Wilderness (a Class II area), 25 miles northeast and Hell's Canyon NRA (a Class I area), 21 miles northwest.

Smoke impacts were projected for both broadcast and pile burning operations based on prescribed meteorological data which includes 20-foot wind speeds of 2 to10 miles per hour; specified wind direction; poor, fair, good and excellent dispersion days (as projected by the National Weather Service on the day of the burn); smoke/ambient airflow mixing height. The amount of burning completed in a single day was estimated by referencing District prescribed fire accomplishment records and local knowledge.

SASEM projections indicate that smoke produced during prescribed burning would temporarily reduce air quality and visuals down-wind of the burn site, but would not exceed National Ambient Air Quality Standards (NAAQS) at the receptor sites. Total suspended particulates (TSP) and PM10 standards would not be exceeded during a typical day of broadcast burning 25 acres on fair, good or excellent dispersion days. These standards would only be exceeded in a zone extending from .56 miles to a maximum of 3.29 miles down-wind of the burn site during a typical pile-burning day of 70 piles. Intensity of the impact would depend on weather conditions during and immediately following the ignitions. Burning would be conducted under favorable atmospheric and fuel moisture conditions to minimize the amount and duration of particulate emissions.

Southern Idaho National Forests, including the Payette, have joined the Montana/Idaho State Airshed Group and now operate their respective prescribed burning programs under a joint operating plan designed to improve compliance with local, state and federal air quality regulations by coordinating prescribed burning activities over a large scale, regulating the timing and amount of burning to minimize undesired cumulative effects of smoke.

The public will be notified of planned burns through a notice placed in the local newspaper, telling where and when the burn will take place. The notice will be placed at least two weeks prior to the burn.

Comments on Fire and Vegetation

Comment from Letter 1: On page 1-6 you chose the historical range of variation after Barrett 1987 based on the Rapid River drainage, an area without the anthropomorphic influences common to the Meadows Valley. The reason for extrapolation is unclear especially in light of the terrain and over all usage situations. In particular I wonder why you would like lodgepole pine/subalpine fir systems fire size scale applied to treatments.

Response: Rapid River has similar habitat types (grand fir series) and historic fire regimes (mixed severity and lethal) as the Brown Creek project area (see Figure 3-5, page 3-39 in FEIS). This information is used to determine how individual stands should be treated to mimic historic conditions. The "fire size scale" you refer to is determined by the desired VSS (vegetative structure stages) as shown in the Purpose and Need on page 1-5 in the FEIS. These desired forest structural conditions (how much open, young, mid-aged, mature and old forest) are Forest policy in areas where goshawks are present (page 1-4, FEIS).

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Comment from Letter 3: Provide monitoring results demonstrating validity and effectiveness of past silvicultural prescriptions with similar design as proposed in the Brown Creek EIS, and whether results of monitoring such projects has resulted in regenerating "mature, even-aged stands in areas of lethal or mixed severity fire regimes", as proposed in the project.

Response: The even-aged regeneration (EAR) prescriptions are similar to the seed tree and shelterwood silvicultural methods that are commonly used in forestry to regenerate even-aged stands. The difference is that in the EAR prescription the number of trees left (see page 2-8 in FEIS) varies across the stand within the stand boundaries and the residual trees are left to provide stand structure for other resource objectives (see page 2-8, FEIS). Reforestation plans and past seedling survival in this area are discussed on page 2-10 of the FEIS. Only time will develop the "mature" element of the stand.

Comment from Letter 3: Indicate whether existing conditions in the "lethal or mixed severity fire regimes" are outside historic range of variability for wildfire.

Response: The answer to this question can be found in the FEIS. Please refer to page 3-38 in the FEIS.

Comment from Letter 3: Indicate existing fuel loads as determined by stand exams in the "lethal or mixed severity fire regimes" and whether the fuel loads are outside historic range of variability.

Response: Fuel loadings are at the upper limits of historic norms as stated on page 3-38 in the FEIS. Estimates of fuel loading can also be found on page 3-38.

Comment from Letter 3: Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a reduction of the potential for wildfire.

Response: Included in the silvicultural prescription is fuels treatment which includes both natural fuels (fuels existing before timber harvest) as well as fuels created by timber harvest. The effect on future wildfire potential is to reduce it as less fuel is available to burn. A fire could start, but its effect/size would be minor/small (see District files on fire effect/size in areas managed with timber harvest).

Comment from Letter 3: Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a conversion of mature and old forest of mainly late seral species to young forest and mainly early seral species. Indicate why this stand conversion is desirable.

Response: See section on reforestation on page 2-10 in the FEIS. A mature timber stand is harvested and planted to the desired species which typically changes species composition from late seral to early seral, a common forestry practice. Conversion attempts to meet the desired Vegetative Structural Stage conditions derived from the management recommendations for northern goshawks and adapted to the Forest Plan July 1996. Desired conditions for VSS are in Chapter 1, Table 1-1 on page 1-6 in the FEIS.

Comment from Letter 3: Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a reduction in risk of disease and insects. Indicate existing disease and insects and whether they are at epidemic levels.

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Response: Please refer to the bottom of page 3-37 in the FEIS for information on insect and disease levels within the project area. The aerial pest detection survey monitors insect activity on the Forest on an annual basis. By examining the information found in the survey, it is evident there is little or no insect activity in areas that have been previously managed, while in areas where no past management has taken place, such as roadless areas, insect activity is greatly elevated. Disease levels are better identified through ground validation, such as Forest inventories and visits to stands by a silviculturist. Similar patterns or levels of disease, as with insects, are noted in managed and unmanaged areas (see project record for the 1999 survey).

Comment from Letter 3: Indicate the rationale for proposed silvicultural prescriptions (EAR, FS, PCC). Indicate how existing conditions will be improved with proposed silvicultural prescriptions.

Response: Please refer to pages 2-8 thru 2-10 in the FEIS where these silvicultural prescriptions are defined and their rationale is presented. Existing conditions will be improved by moving the forested landscape closer to the desired condition (pages 1-5 thru 1-7 under Purpose and Need in the FEIS).

Comment from Letter 9: The Forest Service has yet to show that trees can be logged sustainably in this area. The soil is poor and the growing season is extremely short.

Response: Cool, moist grand fir sites are some of the most productive on the Forest (page 3-38 in FEIS). Ninety-six percent of the project area is forested: 4% open, 20% young forest, 43% mid-aged and mature forest and 33% old forest (Table 3-12, page 3-40 in FEIS). This area has been managed for about 40 years. Logging can be sustained as well as goshawk habitat (desired forest structure is based on the desired VSS for Goshawk) and the action alternatives bring us closer to sustaining both (Table 3-12, page 3-40 in FEIS).

Comment from Letter 9: Clearcuts in the area show sparse, stunted, and snow damaged trees, and logging here is more akin to mining than to "harvest".

Response: There are 2 to 3 plantation failures, amounting to about 20 acres, where a number of years ago ponderosa pine was planted off-site. This is out of a total of 5,219 forested acres in the planning area. These 20 acres do, however, contribute to the open VSS (see Table 3-12, page 3-40).

Comment on Letter 9: We find it somewhat alarming to read in a draft EIS statements like "the exact number of trees to leave, and whether retention trees would be clumped or dispersed, would be decided when the final silvicultural prescription is completed". This is particularly troubling given that the whole stated idea behind this timber sale is allegedly "Forest Health." If that were so, the document would disclose useful details about how much forest it was actually going to leave standing, and what the shapes and sizes of the remaining forest would be.

Response: Please refer to page 2-8 in the FEIS where it discusses the EAR prescription, the range of trees per acre to be left, and that trees to leave would mainly be large diameter trees and that these trees would be clumped or dispersed. Just how this arrangement of leave trees falls on the landscape cannot be determined until the stands are marked and the distribution of desirable leave trees is known. It also discusses the objectives of this prescription. In the FEIS, Vegetation, Fire and Fuels section, starting on page 3-38 there is a discussion of Direct and Indirect Effects of the Alternatives, and on page 3-32 a description of the Desired Condition.

Comments on Fish

Comment from Letter 3: Indicate whether road reconstruction is in RHCA, and if so, whether current road densities and proposed road reconstruction meets PACFISH standards and guidelines.

Response: Road reconstruction is planned in RHCAs and will meet PACFISH standards and guidelines for reconstruction. There is no standard addressing the relationship between road density and road reconstruction. We have consulted with the National Marine Fisheries Service and final concurrence on this project has been reached.

Comment from Letter 3: Indicate whether a subbasin-to-subwatershed scale restoration plan has been prepared for the Little Salmon Subbasin, and if so, provide a description of the plan.

Response: A draft watershed restoration plan for the Little Salmon River has been prepared and can be found in the project record. The draft Little Salmon River Watershed Restoration Plan is a coordinated, multi-year plan for Federal agencies to begin habitat recovery in the Little Salmon River. The principal plan components are:

- Protecting habitat strongholds currently in good condition.
- Modifying current Federal actions to facilitate restoration.
- Planning outyear actions to trend towards recovery of listed fishes.
- Working cooperatively with State and private owners toward restoration.

Comment from Letter 10: We feel that the 300-foot protection buffers are way too extensive to accomplish the PACFISH goals and could easily be reduced to 150-foot buffer zones in fish bearing perennial streams.

Response: A watershed analysis was not done for this project, therefore PACFISH buffer widths cannot be changed (see page 1-11 and page 2-10). See page 1-1 in the FEIS for the history of this sale.

Comments on Roadless Area and Wilderness Potential

Comment from Letter 1: At page 1-9 issue 1-6, why does timber harvesting without roads have an influence on the roadless character of an area?

Response: Please review Chapter 3, Roadless Character and Wilderness Potential, on page 3-45 through 3-53 in the FEIS. Timber harvest affects wilderness attributes, thus roadless character and wilderness potential.

Comment from Letter 1: At page 1-12, roads and access, my objection to various closures and management of roads situational changes is to assure that the area in question does not qualify in any way for the roadless area inclusions proposed recently by the administration.

Response: The roads to be closed are system roads. Administrative use is allowed. These roads are to remain on the system for future management opportunities. We do not foresee any of these roads included as part of the roadless area.

Comment from Letter 1: At page 3-48 there is discussion of a wilderness bill that might have influence on the area. I don't believe there is any bill that has been considered by any congressional committee that would be influenced by the Executive Order that offers protection until passed or the session ends.

Response: This bill (HR488) is still pending in Congress. The Executive Order on roadless has nothing to do with this bill and does not recommend wilderness designation for the roadless areas.

Comment from Letter 2: Because of the lack of management over most of the forest for some time, it is time to act to help restore the health of at least a small part of the forest. Leaving the roadless portion untouched when it has the same health problems as the rest would be a crime.

Response: Thank you for your comment. Alternative II would manage a portion of the roadless area.

Comment from Letter 3: Clearly delineate the need and rationale for proposed entry into roadless area.

Response: Alternative II follows Forest Plan direction for the Management Areas that the Brown Creek proposal lies within (see page 1-1 in FEIS). Page 1-5 thru page 1-7 in the FEIS discusses the Purpose and Need of the Proposed Action. The maps on page 2-5 and 3-51 show the roadless area boundary in relation to the proposed harvest units.

Comment from Letter 5: We prefer Alternative III because it avoids cutting timber in the Patrick Butte Roadless Area (80,644 acres). Alternative II would remove 235 acres (105 acres would be directly effected) from the Roadless area. This is 0.3 percent of the Patrick Butte Roadless area. As small as this percentage may appear, this loss along with the historical loss to the French Creek/Patrick Butte Roadless Area is a classic example of cumulative effects. If you select the second alternative (the preferred alternative), please explain if there is any rationale beyond that of commercial harvest as to why this is necessary.

Response: We acknowledge your preference for Alternative III. Wilderness is only one potential use for these lands. The Forest Plan, which we are currently under, does not recommend this area for wilderness. One of the main elements of the Purpose and Need is to manage for a diversity of forest structure. We are currently not meeting that desired condition in this area (see page 1-6, FEIS). By converting mid-aged, mature and old forest to young forest we move towards sustaining the desired forest structure, and as a result create a more diverse forest where wood products result, meeting other Forest Plan objectives. The cumulative effect of all actions, including boundary adjustments using the protocol for the current Forest Plan Revision, was an increase in acres in the roadless area.

Comment from Letter 8: We remain concerned about roadless area logging and about inaccurate delineation of roadless areas on the Payette National Forest.

Response: The area you are concerned with is within the suited timber base in the current Payette Forest Plan. This area is in need of treatment (vegetation) to meet the desired condition described in the Purpose and Need on page 1-5 through 1-7 in the FEIS. The effects of logging in the roadless area are displayed in the FEIS on pages 3-45 through 3-53. The roadless boundaries have recently been reexamined and redelineated at your request. Without specific areas of concern we cannot further respond.

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Comment from Letter 8: The discussion of wilderness attributes on page 3-49 of the FEIS is remarkably muddled, despite years of debate about the area's suitability as wilderness. Opportunities for solitude, for primitive recreation and the area's natural integrity are rated as only moderate.

Response: The roadless portion of the Brown Creek project area is on the edge of the Patrick Butte roadless area next to an area that has been extensively roaded and managed (see map on page 3-51 and page 2-5). It should be noted the discussion of wilderness attributes is only for that part of the roadless area within the project area (see page 3-48 and 3-49). We agree, a discussion of the entire roadless area would likely have a different assessment of wilderness attributes. The Brown Creek project area is close to Meadows Valley and the town of New Meadows and other private land including Boise Cascade lands and ranches (see vicinity map on page 1-3 in the FEIS). The road system has been in place for many years - areas closest to population centers were roaded first. We realize that this is a subjective call but moderate seems to be the correct designation. If this project were a few miles further into the roadless area, or in a more remote area, these wilderness attributes would most likely be in the high category. We believe the discussion of wilderness attributes on page 3-49 of the FEIS correctly reflects it's current condition.

Comments on Timber

Comment from Letter 1: Tree and stand growth often occur at different times and rates in an area. At page 1-7 which one is having slow growth, individuals or the stand?

Response: The discussion of growth is on the stand level. Individual trees within the stand may be growing at different rates, but the discussion in the FEIS is applicable to the stand as a whole. On page 1-7 of the FEIS it says that strata 23, 24, 33, 34, and 35 have slow growth. Strata and stands are closely related.

Comment from Letter 1: At page 2-10, what is the Basal Area measured in, square feet or square meters?

Response: It is 80 to 120 square feet of basal area. This clarification has been added to the FEIS.

Comment from Letter 3: Indicate TSPIRS cost per MBF for FY 1997 and 1998 for the forest.

Response: The TSPIRS report does not display this information directly; however, we developed a cost per thousand board feet sold in 1997 by dividing the total Payette National Forest timber-related expenses ($10,109,484) by the total timber volume sold and awarded (39.05 mmbf - million board feet) for an average cost of $258.89 per mbf (thousand board feet).

Comment from Letter 3: Indicate current stand composition by species and the estimated quantity of species (in MBF) proposed for "treatment."

Response: The percentage by species to be treated is approximately as follows: 1% ponderosa pine, 16% Douglas-fir, 76% grand fir, 6% Englemann spruce, and 1% lodgepole pine. Current conditions of the stands proposed for harvest are approximately 3% ponderosa pine, 19 % Douglas-fir, 72% grand fir, 5% Engelmann spruce and 1% lodgepole pine.

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Comments on Soil and Water

Comment from Letter 1: Figure 2-3 has a legend that seems to be very confusing, what roads are to be obliterated and does the work planned agree with the definition found in the glossary?

Response: We agree that the legend is in error. The second "Roads to be Closed" in the legend should read "Roads to be Obliterated". This has been corrected in the FEIS. The management prescription for the planned work does agree with the definition found in the glossary.

Comment from Letter 1: At page 1-7, was the road closure required by consultation with the regulatory agency under Section 7 of ESA or was this to meet a policy of the Forest Service?

Response: The prescribed road closures and road obliterations were developed by the Forest Service Brown Creek Interdisciplinary Team based on transportation planning and multiple resource considerations during the NEPA process. NMFS and the USFWS reviewed the Brown Creek proposal and concurred with the Forest Service recommendations.

Comment from Letter 1: At page 1-8, issue 1, road construction with erosion and sediment delivery is discussed, but there is not a similar discussion about obliterating roads. Why isn't there a discussion of the time, amount of sediment delivered and some comparison between measures of road management, especially if sediment is the relevant issue, especially if this is an ESA issue?

Response: The Background statement for Issue #1 on page 1-8 is intended to provide a short background summary and not a detailed analysis or discussion. The background statement does state that, "Mitigation such as graveling road surfaces, or the obliteration and revegetation of non-system roads, can reduce sediment over the long term". The Indicator statement for Issue #1 on page 1-8, " Indicator: Estimated accelerated erosion and sediment delivery, modeled by BOISED and displayed as percent over natural" discusses how sediment is addressed.

A detailed discussion can be found in the Chapter 3, Affected Environment and Environmental Effects, Water Quality and Soil, Direct and Indirect Effects of the Alternatives, Accelerated Erosion and Sediment, on pages 3-9 through 3-13. For example, on pages 3-12 and 3-13 the following statements discuss the effects of short-term soil disturbance and road obliteration:

- "Accelerated soil erosion would also be generated from temporary road and helicopter landing construction and/or obliteration. The accelerated soil erosion would occur from the time of construction until the sites become revegetated."
- "The obliteration of 3.9 miles of open system and non-system roads would reduce sediment once revegetation objectives are met."
- "The removal of six culverts on roads to be obliterated (including two wooden culverts), and the stabilization of streambanks at these stream crossings, would eliminate the risk of culvert and fill failures at these sites."

In addition, BOISED does account for the short-term spike of sediment from temporary roads, skid trails, road construction, road maintenance, and road obliteration.

Comment from Letter 1: At page 1-8, issue 2, it appears that ripped, seeded and/or planted roads and other such areas are still considered a part of the total soil resource commitment. Since these are producing, why are they part of the calculation or area?

Response: Roads and landings that are obliterated are not considered a part of the total soil resource commitment (TSRC) . A definition of TSRC can be found in the Glossary, Appendix A,

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on page A-13, "Total Soil Resource Commitment (TSRC) - The conversion of a productive site to an essentially non-productive site for a period of 50 years or more. Examples are permanent skidtrails, landings, roads, campgrounds, administrative sites, and recreational trails."

A detailed discussion can be found in the Chapter 3, Affected Environment and Environmental Effects, Water Quality and Soil, Direct and Indirect Effects of the Alternatives, Total Soil Resource Commitment (TSRC) on pages 3-13 through 3-14. For example, on page 3-13 the following statements discuss the effects of road obliteration on TSRC, " Obliteration of open non-system roads would reduce the total amount of TSRC. Total Soil Resource Committment for areas disturbed, but returned to production and for road obliteration are shown in Table 3-8. Alternatives II and III would reduce TSRC in the project area to 2.3 percent...."

Comment from Letter 1: At page 1-11 the obliteration of 3.9 miles of road is discussed as a requirement. Is this a requirement of the regulatory agency NMFS and for what specific reasons? Is this a conditional requirement, what is the basis?

Response: The prescribed road obliterations were developed by the Forest Service Brown Creek Interdisciplinary Team based on transportation planning and multiple resource considerations during the NEPA process. NMFS and the USFWS reviewed the Brown Creek proposal and concurred with the Forest Service recommendation. If the Forest would decide not to do the obliteration, consultation with NMFS and USFWS would need to be reinitiated. As such, at this time, we consider it a conditional requirement.

Comment from Letter 1: At page 2-10, I question the use of KV funds for obliteration of roads deemed to be system roads. This is a function of road maintenance or watershed rehabilitation funding once the system road has been decommissioned, KV could be used to reforest the area after decommissioning.

Response: Obliteration of roads occurs only on non-system roads or system roads no longer deemed necessary for the system and that are decommissioned. Direction for use of KV funds is found in FSH 2409.19 - Renewable Resource Uses Knutson-Vandenberg (K-V) Fund Handbook.

Section 11.2 states, " K-V funds may be used to accomplish other resource improvements on the sale area consistent with the sale objectives. Line officers may select the other resource improvements to be funded based on local needs and the guidance on appropriate use of K-V funds in Section 13. In addition, when resource improvements other than regeneration are identified in the SAI plan as needed, the requirement and limitation of sections 11.21 through 11.26 apply to the selection and ranking of projects."

Section 11.25 states, "Select projects that: 1. Stabilize actively eroding sites that threaten loss of on-site productivity and impact downstream beneficial uses. Include stream stabilization and the obliteration of abandoned roads and travel-ways."

Section 13, Appropriate Use of K-V Funds, states, "Except for work activities listed in section 13.5, a wide variety of reestablishment, protection, and improvement projects are appropriate for K-V funding. Management activities in the resource areas of timber, recreation, visuals, wildlife, range, fisheries, soils, and noxious weed control are appropriate....Compliance with this direction requires considerable judgment by approving line officers. "

Exhibit 01 lists examples of the types of projects that may be performed with K-V funding. "This listing is not intended to be all inclusive." Examples found in Exhibit 01 that indicate the appropriate use of KV funds for road obliteration includes:

1) pull back side cast for old roads to reduce landslide potential within sale area;
2) remove barriers to fish passage and stabilize stream banks;

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3) enhance soil productivity;

4) rip or till compacted soils;

5) stabilize erosion; and

6) obliterate and restore productivity on unneeded roads and travel ways not used by purchaser.

Comment from Letter 1: Slash on temporary roads and landings at page 2-16, has considerable research that discusses the amount and kind of sediment reduction that even heavy needle fall provides on disturbed surfaces. It seems that your practice in the field of applying slash amounts to placing a layer of logs, not slash. They act as an impediment to recovery of the area to a ground cover of native plants and forest trees. The volume of large logging debris if subjected to fire would destroy any vegetation that had been successful in establishing because of the high residual heat. Additionally, the debris is an impediment to some wildlife passage. This seems counter to what is trying to be achieved.

Response: The placement of slash to restore temporary roads and landings assists in meeting several resource objectives including: 1) immediate placement of ground cover to reduce erosion; 2) provide large, woody debris for enhancing long-term soil productivity; and 3) providing roughness and microsites to reestablish native vegetation. The slash includes a variety of size classes ranging from fine needles, medium size branches and large logs. The extent, size and distribution of slash should not increase the risk of fire or act as an impediment to wildlife passage.

Comment from Letter 1: The last element on page 2-16 doesn't seem to make sense and doesn't seem to tie to any maps available in the document.

Response: On Figure 2-3, page 2-7, the second "Roads to be Closed" in the legend should read "Roads to be Obliterated". Maps containing specific road numbers can be obtained at the Forest or District office.

Comment from Letter 1: At page 3-6, the rationale for an obliterated roads erosion and sedimentation effect compared with a newly constructed road with various surface treatments, such as gravel, is not clear, or has it been assessed, as I previously pointed out. This seems especially true since barriers of various types are, or can be, required on the roads constructed. While the obliteration sections has a bare, high disturbed soil surface without the barriers, however, may be seeded or planted to new vegetation that takes time to establish. "It is not readily apparent why the closing and replanting of these roads is not a satisfactory measure when compared to long term sediment volumes from obliterated roads?"

Response: The decision to obliterate a road is based on several reasons. First, and foremost, is that the Transportation Planner and ID Team members determined that these roads were not needed for any management activities in the foreseeable future. If the road is not needed for transportation it is Forest policy to return those sites to productivity. Environmental benefits include reduced erosion rates and sediment delivery rates.

The discussion on erosion and sediment rates can be found in Chapter 3, Affected Environment and Environmental Effects, Water Quality and Soil, Direct and Indirect Effects of the Alternatives, Accelerated Erosion and Sediment, on pages 3-9 through 3-13. For example, on pages 3-12 and 3-13 the following statements discuss the effects of short term soil disturbance and road obliteration:

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- "Accelerated soil erosion would also be generated from temporary road and helicopter landing construction and/or obliteration. The accelerated soil erosion would occur from the time of construction until the sites become revegetated."
- "The obliteration of 3.9 miles of open system and non-system roads would reduce sediment once revegetation objectives are met."
- "The removal of six culverts on roads to be obliterated (including two wooden culverts), and the stabilization of streambanks at these stream crossings, would eliminate the risk of culvert and fill failures at these sites."

In addition, the BOISED model does account for the short-term spike of sediment from temporary roads, skid trails, road construction, road maintenance, and road obliteration. Basic BOISED erosion rates in the first year are 67,500 tons/sq. mi. per year for new construction and are 1,000 tons/sq. mi. per year for road obliteration. Closed roads erosion rates are reduced to 1,250 tons/sq. mi. per year after 6 years and Obliterated Roads erosion rates are reduced to zero after 4 years. Erosion rates are adjusted for various mitigation measures applied. For example, Road Obliteration rates are actually less when the Forest applies slash to the disturbed surfaces to provide ground cover and roughness.

Comment from Letter 1: There is a discussion of a water yield problem on page 3-9. It is not clear to me what the problem with the hydrograph or flow volume model seems to be.

Response: Through the initial scoping of this project, interested publics expressed concern over effects on water yield from timber harvesting. The Hydrologic Risk section on page 3-9 provides a background discussion that relates to this issue. A detailed discussion can be found in the Chapter 3, Affected Environment and Environmental Effects, Water Quality and Soil, Direct and Indirect Effects of the Alternatives, Hydrologic Risk , on page 3-15. For example, on page 3-15 it states, " A hydrologic risk analysis was conducted for all alternatives; the results are displayed in Table 3-9" and that "There would be no increase in the overall hydrologic risk rating due to the relatively small increase in Canopy Removal Index (CRI) for Alternatives II and III. The hydrologic risk would remain low in the Sixmile Creek Subwatershed and moderate in the Brown Creek Subwatershed."

Comment from Letter 3: Indicate date and results of last forest validity and effectiveness monitoring of BOISED model. Indicate whether BOISED model was modified as a result.

Response: Validation monitoring is done to answer whether the predictive relationships (erosion coefficients) are appropriate. It requires a long-term commitment and intensive data collection and is usually done by research. The erosion coefficients for BOISED were obtained from the USDA Intermountain Forest and Range Experiment Station's Tailholt-Circle End and Silver Creek Study Areas during the 1960's through the 1980's. The Forest has not conducted any additional validation monitoring since that period.

The BOISED computer model is an operational sediment prediction model. It is based on the conceptual model described in the publication entitled "Guide For Predicting Sediment Yields from Forested Watersheds" published in October 1981 by the Northern and Intermountain Regions of the USDA Forest Service referred to as the R1/R4 Sediment Guide. The most recent version and the assumptions used on the Payette National Forest is documented in the "BOISED User's Guide and Program Documentation", by Reinig, L. et al. 1991. All documentation, including erosion coefficients, is found in these two documents.

Comment from Letter 9: The streams are in terrible shape and the soil productivity is obviously impaired.

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Response: We agree that past management activities, such as livestock grazing, agriculture, timber harvesting, and road building, have affected soil productivity and water quality. A discussion of current watershed conditions can be found on the following pages in the FEIS: page 3-5 for accelerated erosion; page 3-7 and 3-8 for channel stability ratings by subwatersed; page 3-7 for total soil resource commitment and pages 3-14 and 3-15 for detrimental disturbance (soil). All action alternatives propose closing and obliterating roads in an attempt to improve watershed resource conditions.

Comments on Wildlife

Comment from Letter 1: At page 1-9, elk habitat effectiveness seems to lack local monitoring data on road densities influence on elk. On the Forest, several areas have numerous special seasons to encourage elk harvest in areas with high road densities; even biologists for the Idaho Fish and Game admit the lack of correlation. While mature bull ratios are low, total elk numbers are high, yet the EHE elements are applied without any apparent concern for this problem. There is a lack of any discussion in the document about this problem. Also there is no discussion of the monitoring to deal with the management indicator species or their appropriateness.

Response: The Payette National Forest uses the "Elk Habitat Effectiveness Model" to monitor habitat for elk, a management indicator species, as our current Forest Plan dictates (page 3-20, FEIS). One of the key components of the model is the open road density for a specific area. The Forest is considering appropriate ways to measure and assess management actions on elk and other wildlife species during its Forest Plan Revision process. To consider it in this analysis is beyond the scope of this project. The Idaho Department of Fish and Game has attributed the decline in the bull/cow ratio to access and increased hunting pressure.

Comment from Letter 1: In Appendix C, page C-7, the monitoring that is proposed (Forest snag guidelines) seems to be of little value if there was no baseline established that would validate the rate of change with time or the types of treatments that are applied.

Response: The Snag and Coarse Woody Debris Guidelines for Timber Harvest Projects acknowledges that monitoring and additional inventories will be the tools needed to fine-tune the future management of this resource. Post sale monitoring of this area will provide, at a minimum, a comparative relationship with similar activities, past and present, as well as plans for the future.

Comment from Letter 6: May I suggest that this area be managed as a wildlife, fish, and plant habitat sanctuary preserve.

Response: Thank you for your comment. This type of consideration is beyond the scope or purpose and need for this project and it is not consistent with management area direction found in the Forest Plan (see page 1-1 of the FEIS). However, Alternative 1, No Action, would maintain the current condition of the area until another project is proposed.

Comment from Letter 10: We feel the patch clearcut program as proposed is too conservative to sustain the elk populations needed in the area. We feel patch clearcuts should be in the range of 3 to 5 acres rather than 1 to 3 acres, as proposed.

Response: The smaller patch cuts were chosen in order to better maintain hiding cover, meet habitat requirements for goshawk, which are nesting in the project area, and to protect the visual resource (larger clearcuts could be seen from Highway 95). Please see Chapter 3, Wildlife Habitat, for a complete discussion on the effects of this proposal on elk populations.

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Miscellaneous Comments

Comment from Letter 1: The lack of disclosures of the regulatory agency demands in this document is bothersome because their rationale is not apparent. Its influence on the Forest Service management seems obvious, divisive and politically motivated.

Response: Regulatory agencies didn't have a significant direct influence on the alternatives. Adjustments to the 1989 Selected Alternative were mainly influenced by our own goshawk policy (Payette Forest direction letter, 1996, page 1-5, FEIS). Road gravelling, road closures (to meet Forest Plan wildlife standards) and minimal road obliteration (short spurs that were former temporary roads that should have been closed anyway) had been discussed as things that should be done to reduce wildlife vulnerability and to reduce sedimentation. Alternative III was developed to address the roadless issue.

Comment from Letter 1: In Appendix C, page C-1, funding, I believe the statement is unlawful. You cannot set conditions for Congress and the monetary appropriation and authorization process the agency operates at their behest.

Response: We estimate the cost of this work outside of the timber sale contract to be $15,000 to $20,000 (obliteration and closures). If by chance this doesn't get funded by direct appropriations we have sufficient discretionary funds available to us on a yearly basis to get the job done.

Comment from Letter 4: We recommend that scarification be avoided as a site preparation tool where huckleberry is present - use light broadcast burning or hand scalping. We also recommend that the overstory be maintained at 35 percent canopy closure or greater to minimize "sun scald" and frost damage to the huckleberry plants.

Response: The harvest prescription planned is not conducive to your recommendations. The purpose of the EAR units is to regenerate ponderosa pine, Douglas-fir, western larch and lodgepole pine. These species require more sunlight than a 35 percent plus canopy closure would afford. On average, approximately 12 trees per acre would be left, clumped and/or dispersed. These species also need minimal competition from other plants to survive and thrive. We are treating less that 20% of the project area in Alternative II, the preferred alternative. Huckleberry plants would not be affected on the remaining 80% of the project area.

Comment from Letter 6: This project will damage soil, water, wildlife, fish, plant, scenic and roadless-wilderness resources.

Response: The analysis in Chapter 3 of the FEIS does not show this level of adverse effects to the described resources. Actually, for many of the resources under either action alternative, there is an improvement over the existing condition.

Comment from Letter 8: The Final EIS should identify protection of the trail to Granite Mountain as an issue of high importance in the proposed timber sale. The DEIS proposes to log across the (miss-identified) trail, to repair damage to it, and to return trail to original location if necessary. Who knows what this means? We request a 300-foot, non-logging buffer along either side of the Granite Mountain trail and the Bally Mountain trail.

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Granite Mountain Trail

Response: The trails were miss-identified. The trail numbers for both the Granite Mountain trail and the Bally Mountain trail were correct, but the names were switched. This has been corrected in the FEIS (See Figure 2-3, Chapter 2 in FEIS). The trail does not go through the unit. The boundaries were set back away from the trail to provide some buffering but because of open stand conditions in a couple spots the harvest unit will be visible. This is considered minor when considering the total length of the trail. Also, once these units are regenerated vegetation will be more visually diverse.

Bally Mountain Trail

Response: This trail will bisect a harvest unit in alternative II (see map on page 2-5 in FEIS). To buffer the trail would essentially mean eliminating the unit in need of treatment. The harvest will be an eye sore to some in the short term (use is low), but after about 10 years, it will add to the visual diversity.

Both of these trails in the affected areas are in Management Area 11 of the Forest Plan where timber harvest and range management is the predominant use (page IV-203, Forest Plan). Two-wheeled motorized use is allowed (see annual errata travel map, valid June 1, 1999 to May 31, 2000 in project record or at District offices).

Comment from Letter 8: We remain concerned about water quality, old growth forest management, sensitive species protection, and the agency's pathological failure to commit funding to implement mitigation measures such as road closure and obliteration projects. Please include a single overview map of the area in the final EIS, which identifies trails, roads, streams, proposed cutting units, and the proper roadless area boundary.

Response: Since you were not specific about your concerns we cannot respond to the first part of your comment. Please review the FEIS. Refer to response to comments, Access and Roads and Soil and Water sections, for information on funding road closures and road obliteration. Maps containing the information you requested are in the FEIS, pages 2-5, 2-6, and 2-7. To put all this information on one map at the scale needed for a document makes the map unreadable; therefore, the reason for different maps.

Comment from Letter 9: Commenters are opposed to the timber sale and urge you to select the no action alternative, or better still, create an alternative which begins to repair the incredible damage the Forest Service has caused in this area without making things worse.

Response: We acknowledge your preference for the No Action Alternative. The other alternative you suggest would not meet the purpose and need of the EIS. Please review Chapter 3 in the DEIS or FEIS for information on the current condition and the environmental impacts associated with the alternatives.

Comment from Letter 9: This area has been high graded, then clearcut, and of course a road system far in excess of what is good for wildlife has been carved out of the area.

Response: Please refer to the current condition for vegetation in Chapters 1 and 3. The area is currently 96 percent forested with well-stocked stands. The remaining 4 percent in the open condition is mainly strata 21 with brush and tree seedlings in the understory. We have proposed closing 13.8 miles of road and obliterating an additional 3.9 miles to benefit wildlife and fish.

Comment from Letter 9: Please assure that the Final EIS addresses the failures of the draft by including an adequate discussion of and providing necessary protections for old growth, water quality, wildlife, soil productivity, livestock impacts, and regeneration.

Response: Discussions of the above concerns can be found in the FEIS on the following pages: old growth on page 3-24 and 3-28; water quality on pages 3-3 thru 3-18; wildlife on pages 3-19 thru 3-31; soil productivity on pages 3-7, 3-13, and 3-14; livestock impacts on page 1-12; and regeneration on page 2-10. Without being more specific, we cannot tell what these failures are. However, we have made additional analysis for the FEIS. Please see the appropriate sections in the completed FEIS.

Comment from Letter 11: The Department's comments provide additional information and references on soil productivity and noxious weed control.

Response: Thank you for the additional information and reference sources.

COMMENT LETTERS ON THE DRAFT EIS FROM FEDERAL, STATE, AND LOCAL AGENCIES, AND FROM PRIVATE INDIVIDUALS OR GROUPS

DEIS Letter No. 1

Ron C. Hamilton
PO Box 4223
McCall, ID 83638

November 21, 1999

New Meadows District Ranger, Kimberly Brandel
Payette National Forest
PO Box 1026
McCall ID, 83638

Re: Draft Environmental Impact Statement Brown Creek Timber Sale.

Dear Ranger Brandel;

Thanks for allowing me the chance to review the Draft Environmental Impact Statement for the Brown Creek Timber Sale. The importance of managing the National Forest's forested land resources through well thought out and conducted timber sales is extremely crucial. Crucial to the socio-economic well being of the local communities and Adams and Valley counties, but it is essential for the protection and enhancement of the resources of these lands your agency is assigned to manage. It appears that some regulatory agency's, not assigned this role, dictates far more land management actions than congress ever intended under the laws they have passed. The most distressing thing is that an agency which is supposed to be looking more holistically and ecologically, which includes humans, continues to have a singular purpose agency dictate its every proposed action and activity. The single-minded endeavors under the guise of the Endangered Species Act seem at cross-purposes with interactions in the ecosystem. Even causing a threat to one species while enhancing another. The lack of disclosures of the regulatory agency demands in this document is bothersome because their rationale is not apparent. Its influence on the Forest Service management seems obvious, divisive and politically motivated.

In the document at page 1-3 and 2-4 the miles do not agree. Figure 2-3 has a legend that seems to be very confusing, what roads are to be obliterated and does the work planned agree with the definition found in the glossary of the document? There is no indication in Figure 2-3 which of the existing roads are presently closed and which are to be closed or management status altered by this proposal or by a decree the regulators in other agencies issued as an opinion to complete consultation? Without a better product to evaluate an assessment of your analysis is very difficult. I presume those areas of road closures and obliteration will not be subjects of consideration for some roadless status being proposed by the Executive Branch.

On page 1-5 you chose the historical range of variation after Barrett 1987 based on the Rapid River drainage, an area without the anthropomorphic influences common to the Meadows Valley. The reason for extrapolation is unclear especially in light of the terrain and over all use-age situations. In particular I wonder why you would like lodgepole pine/subalpine fir systems fire size scale applied to treatments. I suspect that might bother the regulatory agencies as well as others.

Tree and stand growth often occurs at different times and rates on an area. At page 1-6 which one is having slow growth, individuals or the stand?

At page 1-6 was the road closure required by consultation with the regulatory agency under section 7 of ESA or was this to meet a policy of the Forest Service? These needs should be identified so that extra ordinary measures beyond the best management practices under the Clean Water Act can be attributed. This is necessary because the Clean Water Act calls for protection of aquatic species such as fish that are normally found in the particular system.

At page 1-7, issue 1, road construction with erosion and sediment delivery is discussed, but there is not a similar discussion about obliterating roads. Why isn't there a discussion of the time, amount of sediment delivered and some comparison between measures of road management, especially if sediment is the relevant issue, especially if this is an ESA fish issue? It would seem the scale of disturbance; its influence on hydrologic function restoration and time frame is a relevant issue not something dictated without consideration or assessment. It would

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also seem appropriate to redefine the prudent operator concept under the timber contract so that certain sediment minimizing steps are considered prudent to provide the necessary water quality standards if a normal season of operation is expected.

At page 1-7, issue 2, it appears that ripped, seeded and /or planted roads and other such areas are still considered a part of the total soil resource commitment. Since these are producing why are they part of the calculation of area?

At page 1-8 elk habitat effectiveness seems to lack local monitoring data on road densities influence on elk. On the Forest several areas have numerous special seasons to encourage elk harvest in areas with high road densities, even biologists for the Idaho Fish and Game admit the lack of correlation. While mature bull ratios are low total elk numbers are high yet the EHE elements are applied without any apparent concern for this problem. There is a lack of any discussion in the document about this problem.

At page 1-8 issue 6, why does timber harvesting without roads have an influence on the roadless character of an area? It appears that the definition for roadless has taken on considerable similarity with the legal definition for Wilderness. The mere statement about an area without roads seems clear with only adjacency of the road influence having any apparent disparity among parties. The eastern US wilderness areas have been historically logged and "Ways" of the pioneers, which were roads, have been included in these areas supposedly, "untrammeled" by man.

At page 1-10 the obliteration of 3.9 miles of road is discussed as a requirement. Is this a requirement of the regulatory agency NMFS and for what specific reasons? Is this a conditional requirement, what is the basis?

At page 1-11, roads and access, my objection to various closures and management of roads situational changes is to assure that the area in question does not qualify in any way for the roadless area inclusions proposed recently by the administration.

At page 2-10, what is the Basal Area measured square feet or square meters?

At page 2-10, I question the use of KV funds for obliteration of roads deemed to be system roads. This is a function of road maintenance or watershed rehabilitation funding once the system road has been decommissioned. KV could be used to reforest the area after decommissioning.

Slash on temporary roads and landings at page 2-16, has considerable research that discusses the amount and kind of sediment reduction that even heavy needle fall provides on disturbed surfaces. It seems that your practices in the field of applying slash amount to placing a layer of logs not slash. They act as an impediment to recovery of the area to a ground cover of native plants and forest trees. The volume of large logging debris if subjected to fire would destroy any vegetation that had been successful in establishing because of the high residual heat. Additionally, the debris is an impediment to some wildlife passage. This seems counter to what is trying to be achieved.

The first element on page 2-17 doesn't seem to make sense and doesn't seem to tie to any maps available in the document.

The Forest Service seems to want to enter an area of control, at page 2-18 that they have no authority for, except on roads on National Forest system lands that they manage. Most states have some form of transportation department that works closely with rules established by US Department of Transportation and there own to handle the transport of hazard materials and flammables. By interjection of rules by your agency you make yourself personally liable for any problems these rules may create. I am aware that most of you are not familiar with the state and federal rules for fuel transport. I suggest that you limit your controls to fuel storage and location of acceptable parking or fueling areas while working with the other agencies that administer the rules.

At page 3-6, roads, the rationale for an obliterated roads erosion and sedimentation effect compared with a newly constructed road with various surface treatments, such as gravel, is not clear, or has it been assessed, as I previously pointed out. This seems especially true since barriers of various types are or can be required on the roads constructed. While the obliterated sections has a bare, high disturbed soil surface without the barriers, however, may be seeded or planted to new vegetation that takes time to establish. It is not readily apparent why the closing

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and replanting of these roads is not a satisfactory measure when compared to long.term sediment volumes from obliterated roads?

There is a discussion of a water yield problem at pages 3-8&9. It is not clear to me what the problem with the hydrograph or flow volume model seems to be. Having taken hydrology from Satterland I remember the large amount of time spent on discussing shape of the hydrograph and the over all flow and its timing in the watershed. Without these being displayed the overall influences of the amplitude and shape of the curve and how it effects the various aquatic elements is cartainly not clear and the discussion in the write up certainly does not help clarify it. A similar problem is found at page 3-16 in the first statement. It is true that all of the things mentioned can occur but it is important in an assessment to point out what in fact will occur based on the proposal. As I previously pointed out without some discussion of the energy regimen in the area and the various treatments influences on that regimen the overly general first statement on that page may or may not be true and some are more influencing than others. Right now the only real assessment based on the elements you discussed is that something may happen but I don't believe you are sure what it will be. You seem to infer it will be a delta change in the hydrograph, which may be problematic.

At page 3-20 and in other areas of the document you use the term habitat type in at least two conflicting ways.

There is no discussion of the EHE evaluation problem I previously pointed out and at page 3-48, and there is no discussion of the monitoring to deal with the management indicator species or their appropriateness. I raise this question since there has been discussions by your agencies research group that point to several problems with management indicator species and the way that they may influence guilds of species.

At page 3-48 there is discussion of a wilderness bill that might have influence on the area. I don't believe there is any bill that has been considered by any congressional committee that would be influenced by the Executive Order that offers protection until passed or the session ends.

At page C-1, funding, I believe the statement is unlawful. Congress by law mandates that the agency will carry out management actions on the National Forests but by law. The agency can make no conditions that reflects on those management actions based on the necessary annual funding of such management programs which annually maybe carried forward as influenced by the budget appropriation process authorized by congress and the Executive Branch. Simply put you can not set conditions for congress and the monetary appropriation and authorization process the agency operates at their behest.

I hope that the timber sale contract provisions are better referanced than they have been in the past in the Table D-1!

At page C-7 the monitoring that is proposed seems to be of little value if there was no baseline established that would validate the rate of change with time or the types of treatments that are applied. This form of monitoring seems more appropriately handled by someone in research where the real influences of the various treatments are assessed on the scale important to species utilizing this habitat. They could assess the effect of distribution and other variables that are actually assessable.

I hope the agency will eventually get past the preemptive problems imposed by the current administration and implement the Forest Plan that had the review of numerous governments and interest groups resulting in an appropriate and achievable comprise of expectations. The "roadless area" dictates now proposed seem to run entirely at odds with the congressional intent previously fostered with the laws and history of previous Executive Branches of the government. The way the Forest Service continues to carry out the programs that are to be implemented under currently approved plans certainly could help the many effected communities. Thank you for your continued work on programs that have such a large impact on people in these communities.

Sincerely,

Ron C. Hamilton

Ron C. Hamilton

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DEIS Letter No. 2

David Alexander
Forest Supervisor
PO Box 1026
McCall ID 83638

NORTHWEST · TIMBER · WORKERS
RESOURCE · COUNCIL

Steve Bliss
PO Box 122
Horseshoe Bend ID 83629

Dear David

I am writing to comment on the Brown Creek timber sale, I would like to support alternative II with some reservations.

It would appear that alternative II will do the most to improve the health of the forest over the biggest area. Because of the lack of management over most of the forest for some time it is time to act to help restore the health of at least a small part of the forest. Leaving the roadless portion untouched when it has the same health problems as the rest would be a crime.

Even though the economics of this sale are not good because of all the studies, the supply of logs is badly needed by the mills that depend on this supply of raw materials. As reported in many papers because forest receipts have dropped so greatly our communities and schools are in big financial trouble. Any help with this problem is greatly needed.

The concerns I have about all the alternatives are the road closures. The roadless areas have become such a big controversy, and hindrance to doing any management activities the potential of closing any roads and then having these areas designated roadless is totally unacceptable. Soon if you continue to close roads we will end up with a Kings forest situation where only a chosen few will be able to access these areas that are so important to our Idaho rural way of life.

Thanks for letting me comment on this proposed action and I would like a response to my concerns on the roads issue.

Sincerely

Steve Bliss

Steve Bliss
North West Timberworkers Resource Council

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DEIS Letter No. 3

Alliance for the Wild Rockies
PO Box 8731 • Missoula, Montana • 59807
Ph: 406-721-5420 • Fax: 406-721-7917
Web: http://www.wildrockies.org/awr
Email: awr@wildrockies.org

December 17, 1999

Kimberly Brandel
District Ranger
New Meadows R.D.
PO Box J
New Meadows, ID 83654

Comments: Brown Creek draft EIS

Please address/include the following in the Final Brown Creek EIS:

1) Indicate whether road reconstruction is in RHCA, and if so, whether current road densities and proposed road reconstruction meets PACFISH standards and guidelines.

2) Indicate date and results of last forest validity and effectiveness monitoring of BOISED model. Indicate whether BOISED model was modified as a result.

3) Provide monitoring results demonstrating validity and effectiveness of past silvicultural prescriptions with similar design as proposed in the Brown Creek EIS, and whether results of monitoring such projects has resulted in regenerating "mature, even-aged stands in areas of lethal or mixed severity fire regimes", as proposed in the project.

4) Indicate whether existing conditions in the "lethal or mixed severity fire regimes" are outside historic range of variability for wildfire.

5) Indicate existing fuel loads as determined by stand exams in the "lethal or mixed severity fire regimes" and whether the fuel loads is outside historic range of variability.

6) Indicate results of forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining even-aged conditions that mimic mixed severity and lethal fire regimes.

7) Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a reduction of the potential for wildfire.

8) Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a conversion mature and old forest of mainly late seral species to young forest and mainly early seral species. Indicate why this stand conversion is destrable.

Missoula Office: 801D Sherwood St. • Missoula, MT • 59802 406-721-5420 • awr@wildrockies.org
Boise Office: 1714 Heron • Boise, Idaho • 83702 208-386-9014 • wildrockies@fastbois.com
Ecosystem Defense Program 406-542-0050 awr-defense@wildrockies.org

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DEIS Letter No. 3

9) Indicate past forest validity and effectiveness monitoring of past silvicultural actions similar to that proposed in obtaining a reduction in risk of disease and insects. Indicate existing disease and insect and whether they are at epidemic levels.

10) Indicate the rationale for proposed silvicultural prescriptions (EAR, FS, PCC). Indicate how existing conditions will be improved with proposed silvicultural prescriptions.

11) Clearly delineate the need and rationale for proposed entry into roadless area.

12) Indicate cost of road reconstruction and how the road reconstruction will be funded. Indicate fund. Indicate whether the road to be reconstructed will be re-vegetated.

13) Indicate cost of road obliteration and how road obliteration will be funded. Indicate fund.

14) Indicate cost of road closure and how it will be funded.

15) Indicate TSPIRS cost per MBF for FY 1997 and 1998 for the forest.

16) Indicate anticipated gross timber receipts. Break-down timber revenues according to estimated quantity of cut by species.

17) Indicate that the proposed road graveling, as proposed for Brown Creek, was originally proposed and dropped from the Granite Mountain project for economic reasons. Explain what these economic reasons were.

18) Indicate current stand composition by species and the estimated quantity of species (in MBF) proposed for "treated".

19) Indicate whether a subbasin to subwatershed-scale restoration plan has been prepared for the Little Salmon Subbasin, and if so, provide a description of the plan.

Thanks.
Don Smith
Idaho representative

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DEIS Letter No. 4

IDAHO FISH AND GAME
Southwest Region
3101 S. Powerline Road
Nampa, ID 83686

Dirk Kempthorne/Governor
Jerry Mallet/Interim Director

December 21, 1999

David F. Alexander, Forest Supervisor
Payette National Forest
P.O. Box 1026
McCall, ID 83638

RE: Brown Creek Timber Sale Draft Environmental Impact Statement (DEIS)

Dear Mr. Alexander:

The Idaho Department of Fish and Game has reviewed the Brown Creek Timber Sale DEIS and we offer the following comments for your consideration.

Based on the vegetation description, the acres to be harvested consist of a high proportion of huckleberry (*Vaccinium* spp.) in the understory. Careful treatment of the rhizomatous huckleberry understory is essential for maintaining black bear habitat. We could not readily find the proposed post-logging treatment for this understory in the DEIS, but we recommend that scarification be avoided on these sites and light broadcast burning or hand scalping be used for post-logging treatment and planting. We also recommend that the overstory canopy be maintained at 35% or greater where possible to minimize sun scald and frost damage to the huckleberry plants.

Thank you for the opportunity to comment on this DEIS. If you have any questions regarding our comments please contact Jeff Rohlman at our McCall Office (634-8137).

Sincerely,

Al VanVooren
Regional Supervisor

Cc: IDFG-NRB (Grunder)
McCall Office (Rohlman)

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DEIS Letter No. 5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: ECO-088

98-079-AFS

December 22, 1999

David Alexander
Payette National Forest
P.O. Box 1026
McCall, Idaho 83638

Dear Mr. Alexander:

We received the **Brown Creek Timber Sale** draft Environmental Impact Statement (EIS # 990389). Our review was done in accordance with EPA's responsibilities under National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309, independent of NEPA, specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions. We review draft and final EISs to assess the environmental impacts of proposed federal actions and the document's adequacy in meeting NEPA requirements. Please refer to the attached information, *EPA's Section 309 Review: The Clean Air Act and NEPA*, for further explanation of our EIS review responsibility.

Based upon our review, we have rated the draft EIS, EC-1 (Environmental Concerns - Sufficient Information). We recommend selecting the third alternative which avoids the French Creek/Patrick Butte Roadless Area. We have enclosed comments that provide more details on this and other concerns.

Should you have any questions, call me at 206-553-1750.

Sincerely,

Richard B. Parkin, Manager
Geographic Implementation Unit

Enclosure

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DEIS Letter No. 5

Environmental Protection Agency (EPA) Detailed Comments on the Brown Creek Timber Sale Draft Environmental Impact Statement

French Creek/Patrick Butte Roadless Area

We prefer Alternative III because it avoids cutting timber in the Patrick Butte Roadless Area (80,685 acres) Alternative II (the preferred alternative) would remove 235 acres (99 acres would be directly effected) from the Roadless area. This is 0.3 percent of the Patrick Butte Roadless area. As small as this percentage may appear, this loss along with the historical loss to the French Creek/Patrick Butte Roadless Area is a classic example of cumulative effects. The draft EIS provides a good discussion of how cumulative impacts from numerous activities have slowly reduced the size and value of the French Creek/ Patrick Butte Roadless Area over the years.

The EIS discusses that there has been a cumulative loss in the French Creek/Patrick Butte Roadless Area since it was first analyzed in the Roadless Area Review and Evaluation (RARE I) in 1972. First, there have been numerous timber sales between 1988 and 1994 around the edges of the Roadless Area. Later, there were three salvage sales after the Corral Fire in 1994. Finally, the proposed Fourmile Timber Sale (1998) would develop another 397 acres bringing further losses to the Roadless Area. All these sales removed about 4,566 acres from wilderness consideration. It appears that boundary adjustments made this year recovered some roadless acres resulting in 948 acres that have been lost in the French Creek/Patrick Butte Roadless Area since RARE I.

However, acreage in not necessarily an adequate unit of measure for the value lost or gained when redrawing boundaries for roadless areas. As an example, the draft EIS states that the French Creek and the Patrick Butte Roadless Areas were originally connected by a bridge of land. That bridge was loss in the Elkhorn Sale, further fragmenting wildlife habitat. This fragmentation is not reflected when stating loss in terms of acres.

We understand that you will not build roads into the Roadless area (helicopters will be used instead) and that the roadless area designation does not prevent the Forest Service from logging. However, clearly the EIS presents a good case for avoiding further cumulative impacts. Cumulative effects analysis is a process to hold the line to further environmental losses. One final reason to avoid the Patrick Butte Roadless area, is that Congress is considering it as a potential new wilderness area.

If you select the second alternative (the preferred alternative), please explain if there is any rationale beyond that of commercial harvest as to why this is necessary.

Purpose and Need

Both the title and Purpose and Need to this project was clear that the underlying need for this project was to manage the land to produce commercial crops of trees. Frequently, the Purpose and Need Statements we have seen from the Forest Service is a laundry list of opposing objectives of which one may be a timber sale. We would like to encourage the Forest Service to continue with clear Purpose and Need statements in their EISs. All of the other objectives should instead be used to shape alternatives and as rationale to select an alternative in the Record of Decision.

Knutson-Vandenburg (KV) Funds

The road closings and replanting, among other activities, rely on KV funds. In the final EIS, explain how the KV funds process works, how certain you are to receive the funding to do all of that which you would like to do, and how and when the funds will be apportioned. You should also talk about the direct appropriations process which is the other source of funding for activities in the Forest Service.

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DEIS Letter No. 6

John R. Swanson
3400 Edmund Blvd.
Minneapolis, MN 55406-2942

22 December 1999

Regional National Forest
P.O. Box 1026
Missoula, Montana 59806.

Dear Sirs;

Please accept my following Comments concerning the
Brown Creek Timber Sale Draft Environmental Impact Statement

this project will damage soil, water, wild life, fish, plant, scenic and roadless - wilderness resources.

May it be my great wish that this area be managed as a Wild life Fish Plant Habitat Sanctuary Preserve.

With a program to grow old-growth.

and to conserve riparian and wet land areas.

So no cutting of this area's streams, including Brown Creek.

With a means of later term program.

and to fully preserve the habitats of the following species:

bobcat, coyote, Mink - Pine Marten, goshawk, great gray owl, fisher, wolverine, spotted frog, lynx, Williamson's sapsucker, Vaux's swift, gray wolf, bald eagle, gray jay, bear, peregrine falcon, Idaho ground squirrel, bull trout and westslope cutthroat trout.

to fully preserve all Roadless areas

and to designate the French Creek Patrick Butte Wilderness of 238,000 Acres

Sincerely,

John R. Swanson

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DEIS Letter No. 7

STATE OF IDAHO
DIVISION OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706-1255 • (208) 373-0502

Dirk Kempthorne, Governor
C. Stephen Allred, Administrator

December 23, 1999

Mr. David Alexander
Forest Supervisor
Payette National Forest
P.O. Box 1026
McCall, ID 83638

Dear Mr. Alexander:

This letter is in response to the Federal Register (Vol. 64, No. 209; October 29, 1999) notice of availability of the Draft Environmental Impact Statement (DEIS) for the Brown Creek Timber Sale. Our comments address air quality issues related to the use of wildland and prescribed fire. We appreciate the need to use prescribed fire as a forest health tool but this must be done in conjunction with protecting human health and welfare.

The DEIS indicates that there will be 169 to 265 acres of pile and broadcast burning for slash disposal (page 2-20). Air quality is mentioned briefly on pages ix and 2-14. Page ix indicates that burn prescriptions "will comply with State of Idaho Air Quality Regulations and the Clean Air Act." Page 2-14 cites the Forest Plan, IV-87, for protecting air quality. This is not enough detail for us to analyze if air quality impacts have been adequately addressed in the DEIS. Has meteorology been analyzed to determine the potential for smoke impacts senstive areas? For example, the town of New Meadows and Hell's Canyon, a Class I area, are very close to the project area. In addition, good smoke management is still the responsibility of the burner even if there is compliance with all laws. How will the public be notified of burn plans and what actions will be taken should a smoke intrusion occur?

In order to assist you to better address the potential air quality impacts from the proposed project in the DEIS, we are providing the following summary on air quality issues with more detailed information in the enclosure.

The Idaho Division of Environmental Quality (DEQ) has the primary responsibility to carry out the requirements of the Federal Clean Air Act in Idaho. DEQ is concerned about smoke emissions for several reasons. The state is 64 percent federal lands and federal land managers plan to expand their fire programs ten fold or more. EPA regulations and policies have increased the need for managing fire emissions.

Health standards for particulate matter (PM) are the primary concern for smoke management. For areas that do not meet the standards, DEQ must develop plans that can take several years to prepare to meet the standards. Idaho currently has four areas that do not meet one or more of the National Ambient Air Quality Standards (NAAQS). In July 1997, EPA adopted new NAAQS for fine particulate matter. Smoke emitted from forest fires is a common source of fine particulate matter.
The Federal Government is subject to all federal, state, and local air quality regulations. The Federal General Conformity Rule states a conformity determination must be made for federal projects emitting air

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DEIS Letter No. 7

Mr. David Alexander
Payette National Forest
December 23, 1999
Page 2

pollutants over specified de minimis levels to show that the projects will not contribute to any NAAQS violations.

The Federal Clean Air Act established a national visibility goal for 156 national parks and wilderness areas which are referred to as Class I areas. Idaho has all or portions of five Class I areas. EPA's new regional haze rule (July 1, 1999) requires that states develop plans to address regional haze.

Idaho prefers to have voluntary rather than mandatory programs related to wildland and prescribed fire. Idaho has an air quality advisory and air stagnation advisory that can impact wildland and prescribed fire operations. There are prohibited substances that cannot be burned such as garbage, tires, and plastics. There has been a Memorandum of Understanding (MOU) between DEQ and the U.S. Forest Service (USFS) Regions 1, 4, and 6 since 1988. A voluntary smoke management program for forest burning in northern Idaho has been in place since 1990. In 1999, the program became year round and statewide.

EPA released its "Interim Air Quality Policy on Wildland and Prescribed Fires" May 1998. The objective of the policy is to provide for fire to function naturally in the wildlands while protecting public health and welfare. The policy provides great incentive for states and federal land managers to work together to develop state smoke management programs.

We support a coordinated effort between state, interstate, federal, tribal, and local agencies. All planned wildland and prescribed fire activities must include careful consideration of air quality impacts and requirements. We look forward to working with you as you develop the DEIS and at the individual project level as well. Thank you for the opportunity to comment and if you have any questions, please contact me by phone at (208)373-0214, by e-mail at driley@deq.state.id.us, or at the address on the letterhead.

Sincerely,

Diane Riley

Diane Riley
Air Quality Analyst
Air Quality Management Unit

DR/dmr

Enclosure

cc: COF
Smoke Management File

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DEIS Letter No. 7

Specific Comments on Federal Register Notice Vol. 64, No. 209; October 29, 1999

Idaho Division of Environmental Quality

The Idaho Division of Environmental Quality (DEQ), State Air Quality Program Office specifically, has the primary responsibility to carry out the requirements of the Federal Clean Air Act (CAA) in Idaho. DEQ has a state office in Boise and six regional offices (see Attachment 1). The state office staff oversee air quality compliance and enforcement, and support ambient air quality monitoring and planning activities. The regional office air quality staff issue air quality permits, operate the monitoring sites, conduct source inspections, work with the local communities, handle complaints, and prepare and implement plans.

DEQ is concerned about smoke emissions for several reasons. The state of Idaho is 64 percent federal lands and is surrounded by states where wildland and prescribed fires can be a major source of emissions. The Federal Wildland Fire Management Policy and Program Review Implementation Action Plan Report (May 1996) calls for an expanded program to reintroduce fire in fire-dependent ecosystems. This may mean a ten fold or more increase in the use of wildland and prescribed fire. EPA regulations and policies have increased the need for managing fire emissions. The following paragraphs discuss the most relevant regulatory issues for wildland and prescribed fire.

National Ambient Air Quality Standards

The National Ambient Air Quality Standards (NAAQS) are established by EPA to protect human health and welfare. There are NAAQS for the following six air pollutants: carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, lead, and particulate matter (see Attachment 2). An area that violates any of the NAAQS is designated nonattainment for the specific NAAQS. Of the six, particulate matter (PM) is the pollutant of most concern for smoke emissions. There are four forms of the PM NAAQS. Prior to July 1997, there were only two, the annual and 24-hour PM_{10} NAAQS. PM_{10} stands for PM less than 10 micrometers in aerodynamic diameter which is equivalent to 1/25,000th of an inch. Last July 1997, EPA promulgated new PM NAAQS. In addition, there is now an annual and 24-hour $PM_{2.5}$ NAAQS. $PM_{2.5}$ stands for PM less than 2.5 micrometers in aerodynamic diameter which is 1/4 the size of PM_{10}. Attainment/nonattainment designations for the new $PM_{2.5}$ NAAQS will begin in the year 2002.

Once an area has been designated nonattainment, DEQ must prepare an attainment plan to meet the NAAQS by EPA specified deadlines. A nonattainment area plan can take several years to complete and generally includes: background information, air quality and meteorological assessments, emissions inventories, control measures, modeled attainment demonstrations, and contingency measures for the specific nonattainment area. Idaho state currently has three nonattainment areas for PM_{10}: Portneuf Valley (Pocatello area); Pinehurst; and Sandpoint. A portion of Kootenai County (Coeur d'Alene area) is a proposed PM_{10} nonattainment area (see Attachment 3). Fort Hall Indian Reservation is a tribal/EPA nonattainment area for PM_{10}. The NAAQS violations are the result of exceedences of the 24-hour PM_{10} NAAQS in the winter as well as an exceedence of the annual PM_{10} NAAQS in Portneuf Valley. These nonattainment areas

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DEIS Letter No. 7

have not had exceedences in over three years and are eligible for redesignation as attainment areas.

There is also a statewide State Implementation Plan (SIP). The statewide SIP includes information on DEQ's general authority to regulate air quality, stationary source permitting, compliance, enforcement, and monitoring programs, nonattainment area plans, rules, statewide emissions inventory, and air stagnation advisories.

Health Effects

$PM_{2.5}$ can lodge deeply in the lungs and are more likely to cause health effects than PM_{10}. The majority of PM from smoke emissions is composed of organic and elemental carbon, and inorganic ash in the $PM_{2.5}$ size class. Toxic gases such as polynuclear aromatic hydrocarbons (PAH) can condense and absorb into particles. DEQ believes that the new $PM_{2.5}$ NAAQS will be more difficult to meet compared to the PM_{10} NAAQS, particularly for wildland and prescribed fire.

Monitoring

DEQ operates an extensive ambient air monitoring network to monitor for the NAAQS (see Attachment 4 and 5). Sites are located in Idaho's major urban areas as well as a few remote areas. The data from DEQ's network is available to the public.

General Conformity

The 1977 CAA amendments made it very clear that the Federal Government is subject to the CAA requirements. Section 118(a) states that any air polluting activity under the jurisdiction of the Federal Government "shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernmental entity."

The 1990 CAA amendments added that the above shall apply to any requirement whether substantive or procedural, any fees or charges imposed by state and local agencies to defray program costs, and any federal, state, or local exercise of authority, process, or sanctions. The 1990 amendments also required EPA to establish the transportation and general conformity regulations. The general conformity rule, promulgated in November 30, 1993, applies to non-transportation related federal activities such as prescribed fire. A conformity determination must be made for projects emitting air pollutants over specified de minimis levels to show that the projects will not contribute to any NAAQS violations. If a project is found to contribute to NAAQS violations, then emissions must be reduced or offset (another source's emissions are reduced). Attachment 6 is a table that indicates the de minimis levels for the different nonattainment areas.

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Visibility

The 1977 CAA amendments, section 169A, established the following national visibility goal: "Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." One hundred and fifty six Class I areas were established in 1977 and included all national parks greater than 6,000 acres, all wilderness areas greater than 5,000 acres, and a few other areas. Class I areas are subject to the most stringent restrictions on how much additional pollution (increment) can be allowed. States containing Class I areas are to develop state visibility plans including long term strategies and monitoring programs to meet this national goal. Only seven states have approved visibility plans. All other states, including Idaho, are under federal implementation plans. Idaho has all or portions of five Class I areas: Selway-Bitterroot; Hell's Canyon; Sawtooth; Craters of the Moon; and Yellowstone (see Attachment 3).

In the mid-1980's, the IMPROVE (Interagency Monitoring of Protected Visual Environments) network began operation. Currently there are at least 75 sites (see Attachment 7) in or near Class I areas. This network is currently being expanded to include 110 sites. These sites monitor visibility through optical, particle, and visual measurements. This data is also available to the public. The data are used to establish background visibility levels, identify chemical species and emission sources, and document long-term visibility trends for assessing progress toward the national visibility goal.

The 1990 CAA amendments established the Grand Canyon Visibility Transport Commission (GCVTC) which issued a report to Congress with recommendations in 1996 on how to address visibility for 16 Class I areas in the Colorado Plateau. Southwestern Idaho was identified as a clean air corridor for these Class I areas. The Western Regional Air Partnership includes federal, state, tribal, private, and public representatives from ten western states. It was formed to implement the recommendations from the GCVTC report. The recommendations were used by EPA to develop the new regional haze regulations which were published on July 1, 1999. The regulations require all states to develop visibility plans to address regional haze impairment to Class I areas within their state and to Class I areas outside their state which may be affected by emissions from within their state.

Smoke Management

Idaho Code includes two advisory programs related to smoke management. 1) The air quality advisory program is primarily to address woodstove and fireplace emissions during the winter. There are air quality advisory programs in Coeur d'Alene, Pinehurst, Sandpoint, Ada County, and Pocatello. 2) An air stagnation advisory issued by DEQ bans all open burning and can apply to any area in the state experiencing critical air quality levels (IDAPA 16.01.01.550-562). An air stagnation advisory is issued when a NAAQS violation is possible or occurring. There are also restrictions for burning of some materials such as trade waste, residential solid waste, garbage, tires, and plastics (IDAPA 16.01.01.600-616).

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DEIS Letter No. 7

Idaho prefers to have voluntary rather than mandatory smoke management programs. A Memorandum of Understanding (MOU) between DEQ and the U.S. Forest Service (USFS) Regions 1, 4, and 6 has been in effect since 1988. The MOU is an agreement for the agencies to share information with each other. There has been a voluntary smoke management program for forest burning in northern Idaho since 1990. This is a joint program with the state of Montana and operates from September through November. Daily forecasts are made to determine if any restrictions are needed. As of fall, 1999, the program will include southern Idaho and the spring/summer burn seasons for both Montana and Idaho.

EPA released its "Interim Air Quality Policy on Wildland and Prescribed Fires" on May 21, 1998. The objective of the policy is to provide for fire to function naturally in the wildlands while protecting public health and welfare. The policy provides great incentive for states and federal land managers to work together to develop state smoke management programs. The programs, certified by the EPA, can be voluntary or mandatory at the state's choice, and will not be a required component of a SIP. If a NAAQS violation occurs due to wildland or prescribed fire emissions and there is a certified state smoke management program, EPA will have the discretion to not designate an area nonattainment or, if the area is already a nonattainment area, to not require a mandatory smoke management program. The policy specifies required elements of a smoke management program and burn plans including minimizing smoke impacts and considering alternative treatments to fire. In addition, if fire emissions are managed within a state smoke management program, then general conformity requirements are met.

Additional Sources of Information

The USFS has prepared the following documents: "Guidelines for Evaluating Air Pollution Impacts" (1992); "National Strategic Plan for Air Resources Management" (1994); "A Desk Reference for NEPA Air Quality Analysis" (1995); "A Screening Procedure to Evaluate Air Pollution Effects in Region 1 Wilderness Areas, 1991"; "Air Quality Conformity Handbook" (1995); and "When and How to Monitor Prescribed Fire Smoke: A Screening Procedure" (1997). The Interior Columbia Basin Ecosystem Management Project (ICBEMP) draft EIS and supporting documents also contain much information on fire.

The U.S. EPA has prepared the following documents: "Prescribed Burning Background Document and Technical Information Document for Prescribed Burning Best Available Control Measures" (U.S. EPA, 1992), "Interim Air Quality Policy for Wildland and Prescribed Fire" (1998); and "Proposed Regional Haze Regulations" (62FR41138, 7/31/97).

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DEIS Letter No. 8

Dave Alexander
Payette National Forest Supervisor
P.O. Box 1026
McCall, ID 83638

26 December 1999

Dear Mr. Alexander:

Please accept these comments on behalf of the American Lands Alliance regarding the Brown Creek Timber Sale Draft EIS.

American Lands
ALLIANCE

Mike Medberry,
Wilderness Circuit Rider
and Idaho Representative
Phone 208/429-1005
910 West Main Street
Suite 228
Boise, ID 83702
mmedi@micron.net
www.americanlands.org

WILDERNESS

We remain concerned about roadless area logging and about inaccurate delineation of roadless areas on the Payette National Forest.

In addition, the discussion of wilderness attributes on page 3-49 of the DEIS is remarkably muddled, despite many years of debate about the area's suitability as wilderness. The description of the area's natural integrity is flawed by being generic and poorly documented and assuming that the area is dominated by shade-tolerant species throughout. In truth, the conditions vary by slope, aspect, soil type, past management activity, vegetative species composition and age class, and past fire activity. Fire scars are present in some areas and absent in others. In relatively remote areas like the Brown Creek watershed, fire fighters have not been the omnipresent and efficient flame dousing machines that you assume they have been for the past hundred years. The assumption that ecological integrity means the condition of the area prior to all human influence is likewise unwarranted. The discussion of sights and sounds of logging equipment and firecutters is irrelevant to the area's natural integrity. For the most part is also inaccurate.

The conclusion that opportunities for solitude are moderate fails to recognize that the project area is adjacent to the larger roadless and proposed wilderness area. That's a large oversight. The criteria you used to reach your conclusion about solitude are arbitrary. For instance, the notion that "mostly continuous tree cover" leads to lack of solitude is counterintuitive at best, and at worst utterly silly. That there are "two short trail segments" on which "recreational use is currently low" hardly suggests lack of solitude as the DEIS claims. The sights and sounds of vehicles are noticeable near the roads, as the DEIS notes, but only a short ways into this dissected and forested landscape their presence is virtually nil.

Opportunities for primitive outdoor recreation are moderate you say? Again, the criteria for such a determination are invisible in the DEIS. Ease of access to such wild land and exceptional ungulate habitat should qualify as offering an outstanding opportunity. That the area is not heavily used, except during elk season, does not diminish the potential for

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DEIS Letter No. 8

use and actually suggests the high quality offered by a primitive outing to this little used area at the end of the road. Valuable ecological features include the area's exceptional elk habitat, old growth fir stands, and riparian habitat. The whole section in the DEIS on roadless values and wilderness suitability is rather pathetic. Have you chased away everyone on the Forest who cares about wild places?

GRANITE MOUNTAIN TRAIL

The Final EIS should identify protection of the trail to Granite Mountain (it is marked as #165 on my maps though is variously identified in the DEIS) as an issue of high importance in the proposed timber sale proposal. The Forest Plan activity schedule directs trail improvement projects for this trail that have not occurred. The Forest Plan also directs the agency to "locate and build (trails) to protect resources and enhance user experience...." The DEIS proposes to log across the (mis-identified) trail, to repair damage to it, and to return trail to original location if necessary. Who knows what this means?

We request a 300 foot non-logging buffer along either side of the Granite mountain trail. It is a splendid trail, and if the Forest Service cares about recreational opportunities, solitude, primitive recreation opportunities and the like, you will protect this trail from damage. Given the placement of cutting units in the proposed sale, this in not a difficult request to honor. The Payette National Forest has a richly deserved reputation for callously obliterating perfectly fine trails with logging units and doing little to mitigate the damage. It's time for this practice to stop. Please don't log across the Granite Mountain trail.

We appreciate that the Forest Service is willing to protect portions of the Bally Mountain trail. Please now protect the rest of that pleasant little trail with 300 foot non-logging buffers.

OTHER ISSUES

We remain concerned about water quality, old growth forest management, sensitive species protection, and the agency's pathological failure to commit funding to implement mitigation measures such as road closure and obliteration projects. Please include a single overview map of the area in the final EIS which identifies trails, roads, streams, proposed cutting units, and the proper roadless area boundary.

Thank you so much for the opportunity to comment on this ill-conceived project one more time.

Sincerely,

Mike Medberry

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DEIS Letter No. 9

POB 3251
Seattle, WA 98114
(206) 322-2062

December 27, 1999

David Alexander
Payette NF
POB 1026
McCall, ID 83638

Dear Mr. Alexander:

These are comments on the Brown Creek Timber Sale DEIS, submitted on behalf of Payette Forest Watch, The Ecology Center, Idaho Sporting Congress, Hells Canyon Preservation Council, and myself.

Commenters are opposed to the timber sale and urge you to select the no action alternative, or better still, create an alternative which begins to repair the incredible damage the Forest Service has caused in this area without making things worse. This area has been high graded, then clearcut, and of course a road system far in excess of what is good for wildlife has been carved out of the area. The streams are in terrible shape and the soil productivity is obviously impaired. The Forest Service has yet to show that trees can be logged sustainably in this area. The soil is poor and the growing season is extremely short. Clearcuts in the area show sparse, stunted, and snow damaged trees, and logging here is more akin to mining than to "harvest." If the Forest Service had bothered to study it's timber sale a little bit prior to releasing a draft EIS perhaps it would know these things. We find it somewhat alarming, for instance, to read in a draft EIS statements like "The exact number of trees to leave, and whether retention trees would be clumped or dispersed, would be decided when the final silvicultural prescription is completed. . .: (DEIS 2-8). This is particularly troubling given that the whole stated idea behind this timber sale is allegedly "Forest Health." If that were so the document would disclose useful details about how much forest it was actually going to leave standing, and what the shapes and sizes of the remaining forest would be.

But the forest health issue is a phony one. If the Forest Service cared about forest health at all it would not be releasing documents like this one, and it would be treating our landscapes with at least a measure of care. There would be an alternative in this project that looked at the area in terms of what it needs and it would move to fix the stream problems and road problems without adding new ones. The Forest Service would have taken a visit to the area, as I have, and observed the poor regeneration, remarked on the logging which has occurred right through the streams, and fronted up to what the agency has done to this place already. The result would have been an alternative that stays out of the roadless area, "non"-commercially thinned

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DEIS Letter No. 9

others, and ripped culverts out of most roads. No such alternative exist. Not one alternative like this exists for commenters to throw their support behind.

Commenters learned many years ago that submitting comments to the Payette National Forest is a total waste of time, but persevered anyway for some years after this fact became obvious, on the hopes the Forest Service would snap out of it. But unfortunately the disdain the Payette NF holds for NEPA has not abated, and the total lack of respect it has for people who value the Forest for things other than money has tainted the process quite a bit. The only way that I have found to influence the Payette NF is by appealing and sometimes litigating its decisions, which is too bad. But the Payette NF has proven that it is unwilling to do things another way, and so we carry on. Please assure that the final EIS addresses the failures of the draft by including an adequate discussion of and providing necessary protections for old growth, water quality, wildlife, soil productivity, livestock impacts, and regeneration. Assure that the NEPA and NFMA requirements have been satisfied as well as Forest Service Manual 2670, 2620, and other FSM requirements hvae been met, along with the PNF Snag guidelines. A discussion of skid roads, temporary roads, and a map indicating where they will be is necessary, given the inclination of the PNF to build unanalyzed "temporary" roads and then leave them on the landscape permanently. Will the PNF permit the timber sale administrator to authorize the construction of roads inside PACFISH boundaries or anywhere else? Will he be permitted to build roads and log landings on top of archeological sites, as he has done twice in the recent past on the PNF? Also assure that the final EIS does not say things which are obviously untrue and please include monitoring requirements in the ROD which are clearly stated, have timelines attached to them, and which are truly designed to accomplish something tangible. We would as always like to see a thorough analysis of soil productivity before this logging occurs. Finally, we note that the citation "Froelich, et al" on page 2-15 cannot be found in Appendix B and we would like a copy of this document.

Sincerely,

Erik Ryberg

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DEIS Letter No. 10

IDAHO FARM BUREAU FEDERATION
P.O. Box 167 • 500 West Washington
Boise, Idaho 83701-0167 • (208) 342-2688
FAX (208) 342-8585

December 27, 1999

Mr. David F. Alexander
Payette National Forest
P.O. Box 1026
McCall, ID 83638

RE: DEIS Brown Creek Timber Sale

Dear Mr. Alexander:

The Idaho Farm Bureau Federation, representing 50,000 member Idaho families has reviewed the Draft Environmental Impact Statement on the Brown Creek Timber Sale and submit the following comments regarding the DEIS.

In general, we support Alternative II (the proposed action) but have some reservations that we would like to bring to your attention.

We feel the ID team and the USFS have gone overboard in their approach to water quality and we are not in agreement with the closing of 13.8 miles of road in the proposal. We feel these roads are vitally important to the interests of our members and the loss of 13.8 miles will reduce their enjoyment of the area. We would ask that this figure be reduced considerably. In our review of the area it appears that much of the proposed closures have very limited or basically no erosion so would not affect water quality. Those portions of the road that do have erosion problems can be easily upgraded with gravel and the roads can be left open for the public's enjoyment. We do agree with the 16.6 miles of road being improved and have concerns about any roads being obliterated.

Riparian Habitat Conservation Areas are always a concern of our members. We feel that the 300 foot protection buffers are way too extensive to accomplish the PACFISH goals and could easily be reduced to 150 foot buffer zones in fish bearing perennial

Home Office: P.O. Box 4848 • 1661 N. 7th, Centennial Plaza • Pocatello, Idaho 83205-4848 • (208) 232-7914

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DEIS Letter No. 10

streams. Non fish bearing streams and ponds, lakes and wetlands of more than one acre need only be 75 feet to accomplish the goal and 50 feet around seeps, bogs, wetlands and lakes of less than one acre is more than sufficient.

We agree with the 242 acres of restocking being required and the stocking rate is acceptable to us.

We feel the patch clearcut program as proposed is too conservative to sustain the elk populations needed in the area. We feel patch clearcuts should be in the 3 to 5 acres range rather than 1 to 3 acres as proposed.

The rest of the EIS (Alternative II) is basically acceptable to us and we thank you for giving us the opportunity comment.

Sincerely,

Frank E. Priestley

Frank Priestley, President
Idaho Farm Bureau Federation

cc: IFBF Forestry Committee
Officers, Directors & Staff
County Presidents

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DEIS Letter No. 11

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
500 NE Multnomah Street, Suite 356
Portland, Oregon 97232-2036

IN REPLY REFER TO:

January 14, 2000

David F. Alexander
Forest Supervisor
Payette National Forest
P.O. Box 1026
McCall, Idaho 83638

Dear Mr. Alexander:

The Department of the Interior (Department), has reviewed the Draft Environmental Impact Statement (DEIS) for the -- Brown Creek Timber Sale, Payette National Forest, Adams County, Idaho. The following comments are provided for your use and information when preparing the Final Environmental Impact Statement (FEIS).

The Department's comments provide additional information and references on soil productivity and noxious weed control.

Page 1-7, Chapter 1, Purpose and Need, Major Issues, Issue #2: Proposed project activities (timber harvest, road management) may affect long-term soil productivity within the project area.

The Report states "The biological productivity of soils depends on the amount of organic matter in the topsoil and on the forest floor." The Report continues (same paragraph) "...soil disturbance can reduce the soil's ability to supply...", and "Certain uses...commit the soil resource to a non-productive condition for an extended period of time." No mention was made in the Report about techniques for soil restoration. Conditions needed for soil restoration to increase native plant species productivity include adequate amounts of specific types of organic matter. Suitable types of organic matter include easily decayed mulch and symbiotic plant root-fungi, known as mychorrizae.

Active research on mychorrizae can be found at the USGS website: **www.biology.usgs.gov/** under research projects at the Forest and Range Ecosystem Science Center and Northern Prairie Wildlife Research Center.

Page 1-11, Chapter 1, Purpose and Need, Other Issues, Noxious Weeds, second sentence.

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DEIS Letter No. 11

The Report states that "...acres and levels of these infestations have not been inventoried to date."

The federal government convened the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW) to identify and begin to address the invasive plant problem in the United States. The FICMNEW Report might be useful in any future weed inventory of the Project site, and is references as follows:

Westbrooks, R. 1998. Invasive plants: changing the landscape of America: Fact book. Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), Washington, D.C. 109 pp.

Further references which might be useful include:

Rodriguez, R. J., and Redman, R. S. 1997. Fungal life-styles and ecosystem dynamics: biological aspects of plant pathogens, plant endophytes and saprophytes. Adv. Bot. Res. 24:169-187.

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Sincerely,

Preston A. Sleeger
Regional Environmental Officer

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Chapter 5

List of Preparers

LIST OF PREPARERS

This chapter lists the members of the Interdisciplinary Team, and others responsible for preparing this environmental impact statement, including background documents. All personnel are employees of the Payette National Forest unless otherwise noted. Experience listed is as of May 2000.

INTERDISCIPLINARY TEAM MEMBERS

Mike Dixon - Transportation Planner
BS Civil Engineering, BS Forestry; 20 years Forest Service experience in engineering, forestry, and hydrology. Team member for transportation planning and economics.

David Ede - Writer/Editor
BA English; 20 years Forest Service experience in reforestation, forest pest management, fire, recreation, NEPA documentation, contracts, and planning. Served as writer/editor and prepared roadless and wilderness attributes analysis.

Larry (Butch) Gould - Wildlife Biologist
BS Wildlife Biology; 23 years Forest Service and BLM experience in wildlife management. Prepared Wildlife Habitat analysis and Biological Assessment/Evaluation for TES wildlife species.

Dave Kennell - Hydrologist
BS Watershed Science; 21 years experience in hydrology. Prepared Water Quality and Soils analysis.

Jack Irish - Silviculturist and Team Leader
BS Forest Management; 28 years experience in forestry and silviculture. Prepared Vegetation, Fire, and Fuels analysis, served as project team leader.

Rich Uberuaga - Fisheries Biologist
BS Fish and Wildlife Management; 25 years professional experience. Prepared Fish Habitat analysis and Biological Assessment/Evaluation for TES fish species.

OTHER CONTRIBUTORS

Kimberly Brandel - New Meadows District Ranger
Provided line officer direction for the project.

Jon Shaw- Asst. Fire Management Officer
Assisted with fire and fuels assessment.

Gary Elliot - Zone Recreation Coordinator
Provided recreation input for project.

Pete Grinde - Range Conservationist
Extended team member for range resources.

Alma Hanson -Forest Botanist
Prepared plant Biological Evaluation and Biological Assessment.

Rod Ludvigsen-Resource Information Specialist
Prepared maps and GIS analyses.

Charlotte Quarnberg - Forestry Technician
Prepared maps and GIS analyses.

Curtis Spalding - NEPA/Recreation Specialist
Reviewed EA for NEPA consistency.

Sue Dixon - Forester
Served as writer/editor for the DEIS.

Melanie Sutton – Served as writer/editor for FEIS.

Morgan Beveridge – Prepared air quality assessment.

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Appendices

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Appendix A
Glossary

accelerated erosion or **accelerated sediment production** - Erosion at a rate greater than natural, usually associated with human activities that either reduce vegetative cover or increase surface runoff.

administrative use - Use by Forest Service personnel under performance of an official duty.

age class - An age grouping of trees according to an interval of years, usually 20. A single age class would have trees that are within 20 years of the same age, such as 1-20 years or 21-40 years.

alternative - One way of conducting or implementing a proposed project.

anadromous - Moving from the sea to fresh water for reproduction. Chinook salmon and steelhead are anadromous fish.

archaeological site - A geographic locale that contains material remains of prehistoric and/or historic human activity. Also referred to as cultural or heritage resource site.

aspect - The direction a slope faces. A hillside facing east has an east aspect.

bark beetles - A group of beetles that can kill live trees by boring galleries and girdling the inner bark.

basal area - The cross-sectional area of the trunk of a tree or stand of trees at breast height (4.5 ft.)

bedload - Sediment that moves along the stream channel bottom by rolling, sliding, or bouncing.

beneficial use - An actual or potential use that may be made of the waters of the state that is protected against quality degradation. Beneficial uses can include domestic, agricultural, and industrial water supplies, recreation, aquatic life, esthetics, wildlife habitat, and salmonid spawning.

biological diversity or **biodiversity** - The variety of life and it's processes, including the variety in genes, species, ecosystems, and the ecological processes that connect everything in ecosystems.

BMPs (best management practices) - Practices determined by the Idaho Department of Health and Welfare, Division of Environmental Quality, to be the most effective and practicable means of preventing or reducing the amount of pollution generated by non-point sources.

board foot - A measurement of wood equivalent to a board one-foot square and one inch thick. Usually expressed in terms of thousand board feet (MBF) or million board feet (MMBF).

BOISED - A predictive computerized model that estimates cumulative sediment production from road construction, fire, and timber harvest activities in forested watersheds.

broadcast burn - Intentional burning of debris on a designated unit of land, where the fuel has not been piled or windrowed, by allowing fire to spread freely over the entire area.

buffer - A land area that is designated to block or absorb unwanted impacts to the area beyond the buffer. Buffer strips along a trail could block views that are undesirable. Buffers along streams can greatly reduce any changes or impacts to stream water quality, temperature, or channel stability.

canopy - The part of any stand of trees represented by the tree crowns. It usually refers to the uppermost layer of foliage, but it can also describe lower layers in a multi-storied forest.

cavity - A hole in a tree often used by wildlife, especially birds, for resting and reproduction.

channel stability - The ability of a stream channel to resist the effects of natural and human-caused disturbance.

clearcut - The removal, in a single cut, of all merchantable trees in the harvest unit.

clearcut with reserve trees - A clearcut with designated leave trees for wildlife or other purposes. In addition, advanced regeneration suitable for future crop trees is retained where feasible.

climax conditions - The late stages of forest succession. Shade-tolerant species make up the majority of trees present.

coarse woody debris - Snags, fallen trees, and decaying logs and large limbs distributed across the forest floor that are larger than 3 inches in diameter. Also called large woody debris.

cold water biota - Animal and plant life that grow best in water temperatures below 18 degrees C.

commercial thinning (CT) - Removal of excess or non-crop trees in young sawtimber stands to improve health and vigor of the remaining trees. This intermediate cut may be used in both uneven-aged and even-aged stands.

compaction - A physical change in soil properties that results when pore spaces are reduced in size and soil becomes more dense. Compaction generally occurs when a load is applied to the soil, such as when heavy equipment makes several passes that compress the soil.

composite subwatershed - A subwatershed containing more than one drainage basin.

composition - The physical and biological characteristics of a landscape. Often, the type of vegetation present, in terms of the species, age class, and physical features.

connectivity - The degree to which similar, but separated vegetation components of a landscape are connected.

corridor - A defined tract of land, usually linear in shape, that enables species to travel between areas of suitable habitat. Corridors enlarge the habitat base for animals with large home ranges, provide for genetic exchange within or between populations, provide a route by which populations can move in response to environmental change, and allow for dispersal of individuals to maintain a well-distributed population.

cover - Vegetation (usually coniferous) that provides wildlife either protection from the elements (thermal cover) or protection from predators (hiding cover).

critical habitat - Areas designated for the survival and recovery of federally listed threatened or endangered species.

crown fire - A fire that advances through the canopy of a forest.

cryoplanated - Reduction of land surfaces mainly due to processes associated with snow and ice-field action.

cumulative effects - Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

cut slope - That portion of the slope that is excavated in constructing roads, trails, landings, or skidtrails.

DBH (diameter at breast height) - The diameter of a tree measured 4.5 feet above the ground on the uphill side of the tree.

debris flow - The sudden movement and transport of a liquified matrix of firm soil material and woody debris down a stream or river channel.

decadent (timber stand) - A stand showing slow growth, significant mortality, and declining vigor. Annual mortality generally exceeds annual growth.

desired condition - In a project analysis document, the Forest-wide desired future condition as applied to a specific project area and modified to fit the site-specific conditions of that area.

desired future condition - In the Forest Plan, a concise but general description by resource of what the Forest should be like 50 years in the future. It is the resulting condition of meeting the goals and objectives by following the standards and guidelines of the Forest Plan.

detrimental disturbance - The alteration of the natural soil characteristics that results in immediate or prolonged degradation of on-site resource quality standards or a reduction in vegetation growth or production potential. Disturbances include soil puddling, soil compaction, soil displacement, soil erosion, and severely burned soils.

developed recreation - Recreation that requires facilities that, in turn, result in concentrated use of the area. Examples of developed recreation areas are campgrounds and ski resorts.

direct effects - Effects caused by an action and occurring at the same time and place.

directional felling - Cutting down a tree so that it falls in the desired direction.

dispersed recreation - Recreation that does not occur in a developed recreation setting, such as hunting, scenic driving, and backpacking.

disturbance - Any event, such as wildfire or a timber sale, that alters the structure, composition, or function of an ecosystem.

diversity - The distribution and abundance of plant and animal species and communities in an area.

down or downed logs - Fallen trees and large logs lying on the forest floor.

duff - The layer of partially and fully decomposed organic materials lying below the litter and immediately above the mineral soil. It corresponds to the fermentation and humus layers of the forest floor.

dwarf mistletoe - A parasitic plant that grows on many conifer tree species. It reduces tree growth and causes stress that may eventually contribute to the death of the tree. It spreads from one tree to another of the same species.

economic efficiency - A measure of how well inputs are used to achieve outputs when all inputs and outputs (including environmental) are identified and valued.

ecosystem - Naturally occurring, self-maintained system of varied living and non-living interacting parts that are self-organized into biophysical and social components.

edge - The interface between landscape elements of different composition and structure, for example between an open clearcut and a closed-canopy forest.

EHE (elk habitat effectiveness) - A weighted numeric rating system having a value of between 0 and 100 that describes elk habitat quality based on open-road density, road impact rating, forage/cover ratio, and the juxtaposition of forage and cover on the landscape.

EMU (elk management unit) - A geographical analysis unit that represents an elk's movements and home range. Elk management units are made up of smaller units called Issue Reporting Areas (IRA's).

endangered species - An animal or plant that has been given federal protection status because it is in danger of extinction throughout all or a significant portion of its natural range.

entry (timber sale) - Entering a forested area by constructing roads and harvesting timber.

ephemeral stream - A stream that flows only as the direct result of rainfall or snowmelt and has no defined bed or bank.

erosion - A process of weathering, solution, corrosion, and transportation of soil and rock material by ice, water, wind, or gravity.

even-aged management - The combination of treatments that result in the creation of a stand of trees of essentially the same age. Regeneration harvest methods that produce even-aged stands include clearcutting, seed tree cutting, and shelterwood cutting.

extensive timber management - A less intensive level of timber management that involves some harvest and usually relies on natural regeneration. Control of competing vegetation and precommercial thinnings are not usually done. Investment levels are low.

fill - Earth or rock moved during road construction and used to build up portions of the roadway.

fill slope - The sloping earth surface on the downhill side of a road resulting from roadway excavation.

fine fuels - Cured grass, leaves, needles, twigs, and small branches that ignite easily and carry fire rapidly.

fine sediment - Or surface fines. Mineral and organic particles smaller than 6.3 millimeters in diameter.

fire group - A grouping of habitat types that have common responses to fire and similar post-fire successional patterns. Fire groups fit within the three fire regimes (see fire regimes, below).

fire return interval - The average time between wildfires in a given ecosystem.

fire scar - A healing or healed-over injury, caused or aggravated by fire, on a woody plant.

fire regimes - The basic fire severity types in coniferous forests:

Lethal - Fire occurs every 150 or more years. All trees are killed.
Mixed - Fire occurs every 30 to 75 years. Older, thick-barked, fire-resistant trees survive.
Non-lethal - Fire occurs every 25 years or less. Kills few trees, but kills and removes weak trees, mostly in the understory.

fire severity - How intensely a fire burns. If fire severity is outside of historic norms, tree mortality could be high. Fires are commonly classed as low, moderate, and high severity.

flood plain - Flat area next to water that is subject to a 1 percent or greater chance of flooding in a given year.

fluvial granitics - Land that has been formed from granite parent material and altered through the erosive force of running water.

forage - Plant material (usually grasses, forbs, and brush) that is available for animal consumption.

forage/cover ratio - The ratio of foraging areas (natural or created openings) to cover areas (usually coniferous forest).

forbs - Broadleaf ground vegetation with little or no woody material.

fragmentation - The splitting or isolating of patches of similar habitat. Habitat can be fragmented by natural events or development activities.

free selection – An unregulated, uneven-aged silvicultural method. Best suited for conversion of even-age-like stands into uneven-aged configurations and for management of multi-aged stands with highly irregular (unbalance) diameter classes or canopy structures.

fuel - Any substance or composite mixture susceptible to ignition and combustion.

fuel break - Any natural or constructed barrier utilized to segregate, stop, and control the spread of fire or to provide a control line from which to work.

fuel loading - The amount of fuel on the ground in different size classes.

fuel management or treatment - The planned manipulation and/or reduction of living or dead forest fuels for forest management and other land-use objectives.

GIS (Geographic Information System) - A computer system that stores and manipulates spatial (mapped) data.

granitics - A. Soils derived from granite. B. Pertaining to relatively coarse-grained, light-colored rocks.

grazing permit - A document that authorizes livestock use on National Forest system lands, specifying the number of animals and length of time allowed for grazing.

ground cover - All vegetative material as well as rock and rock fragments that are in contact with ground.

ground water - The supply of fresh water under the earth's surface in an aquifer or in the soil.

group selection - Harvesting all trees in selected small groups (up to two acres in size). An uneven-aged management harvest method that favors shade-tolerant or shade-intolerant tree species, depending upon the size of the group.

habitat - The place where a plant or animal lives and grows under natural conditions.

habitat type - A distinct assemblage of plants and animals occupying a given area that can be distinguished from surrounding areas on the basis of certain identifiable characteristics, including environmental conditions.

harvest - Removal of timber (or a portion of an animal population) to achieve a desired condition.

helicopter logging - A method of logging timber that uses helicopters to lift and move logs from the woods to a point where they can be loaded onto trucks for hauling to the mill.

herbaceous - Referring to grass and small annual and perennial plants.

hiding cover - Vegetation that can hide 90 percent of an adult elk from human view at a distance of 200 feet or less.

high-risk tree - A tree in a weakened condition, often from stress caused by drought, insects, or disease. A high-risk tree is one that will likely die before the next harvest entry.

historic norms - An estimate of what the characteristics and conditions of what tree stands were like prior to Euro-American settlement. The extremes are excluded. Characteristics and conditions include stand structure and density, species composition, insect and disease activity, fuel loading, and potential fire severity.

horizontal diversity - The distribution and abundance of plant and animal communities and successional stages across an area of land. The greater the number of communities, the higher the degree of horizontal diversity.

hydrologic cycle - Also called the water cycle, this is the process of water evaporating, condensing, falling to the ground as precipitation, and returning to the ocean as run-off.

Idaho batholith - A great mass of intruded igneous rock, mostly granite, that covers much of central Idaho.

ID (interdisciplinary) team - A team of individuals with skills from different disciplines that focuses on the same task or project.

imminently dead tree - A tree that is expected to die within the next 5 years as a result of fire, insects, disease or other stress-causing factors.

indicator - A qualitative or quantitative measure that shows how management alternatives address an issue.

indirect effects - Impacts caused by an action but occurring later in time or farther removed in distance.

individual tree selection or single tree selection - An uneven-aged harvest method that removes selected trees from a stand. The small openings created regenerate naturally over time to maintain or create an uneven-aged stand structure.

inherent erosion hazard - A relative rating of soil erodibility based on: 1) the ability of a soil to take in water and to resist detachment under the impact of rainfall and surface water movement; 2) the effect of coarse fragments on reducing soil detachment; and 3) the effect of topography with climate as a constant.

intensive timber management - Applying a variety of actions to increase the production of timber stands. Actions may include even-aged harvest, reforestation, commercial or precommercial thinning, and control of competing vegetation.

interior forest - Older forested areas that are large and dense enough to have an internal core of habitat protected from light, drying conditions, and edge species.

interior species - Plants or animals that require dense, forested habitat.

intermittent stream - A stream that flows at certain times of the year in response to high ground water levels or surface sources such as melting snow, and that has a defined bed and banks.

IRA (issue reporting area) - A elk analysis unit of at least 500 acres, a subunit of an EMU.

irretrievable commitments - Losses of production or use for a period of time. An example is suited timber land being used for a skidtrail. Timber growth on the land is irretrievably lost while the land is a skidtrail, but the timber resource is not irreversibly lost because the land could grow trees again in the near future.

irreversible commitments - Permanent or essentially permanent resource uses or losses that cannot be reversed, except in the extreme long term. Examples include minerals that have been extracted or soil productivity that has been lost.

issue - A public or agency concern about a specific action or area that is addressed and resolved in the NEPA process.

juxtaposition - The position of being side by side or close together. Relative to position of forage, cover, and other important habitat components.

ladder fuels - Grass, brush, small trees, and dead limbs that allow a ground fire to climb into the crowns of trees.

landform - A geographic and topographic pattern (mountain, valley, ridge) of a particular landscape.

landing - A roadside location (usually cleared and level) where logs are stored or loaded onto logging trucks.

landscape - A heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout.

landslide prone - Landslide-prone refers to land that has a probability of mass movement occurring greater than or equal to 10 percent during a period of 100 years.

landtype - A grouping of lands that have similar origin, composition, structure, and function.

landtype association - A grouping of landtypes that are similar in general surface configuration and origin.

leave tree - A live tree left standing in a unit after harvest.

lop and scatter - When branches are cut from fallen trees and scattered over the area rather than piled for burning. This allows the slash to lie close to the ground to reduce the fire hazard and accelerate decomposition.

management area - An area of land with similar management goals and a common management prescription, as described in the Forest Plan.

mass movement or **mass wasting** - Movement of large masses of earth materials in response to gravity.

mass stability hazard - A relative rating of the susceptibility of a land unit to mass movement.

mature timber - Trees that have attained full development, especially height, and are in full seed production.

merchantable (timber) - Meeting standards for minimum size and soundness.

MIS (management indicator species) - Representative species whose condition and population changes are used to asses the impacts of management activities on similar species in a particular area.

mitigation - Actions that avoid, minimize, reduce, eliminate, or rectify impacts from management practices.

mixed conifer - Stands composed of a mixture of tree species, primarily ponderosa pine, Douglas-fir, grand fir, and to a lesser extent western larch, subalpine fir, and Engelmann spruce.

monitoring - The process of collecting information to evaluate if objective and anticipated or assumed results of a management plant are being realized or if implementation is proceeding as planned.

mortality (stand) - The number or volume of trees that died because of fire, insects, disease, climatic factors, or competition from other trees or vegetation. Some mortality volume can be salvaged and thus contribute to total yield.

National Register of Historic Places - A formal list established by the National Historic Preservation Act of 1966 of cultural resources worthy of preservation. The register is maintained by the National Park Service and lists archaeological, historic, and architectural properties.

natural erosion - The erosion process on a given landform that is not associated with human activities.

natural regeneration (naturals) - The renewal of a tree crop by natural seeding or sprouting.

negative growth - A condition in stands where mortality and decay are occurring faster than tree growth.

NEPA - An abbreviation for the National Environmental Policy Act of 1969, which requires environmental analysis and public disclosure of federal actions.

no action alternative - The most likely condition expected to exist if management practices continue unchanged. The analysis of this alternative is required for federal actions under NEPA.

noxious weed - A designated plant species that causes negative ecological and economic impacts to both agricultural and Forest lands.

nutrient cycling - The circulation of chemical elements and compounds, such as carbon and nitrogen, from the soil into living plants and then back into the soil after the plants die.

obliteration - The treatment of a disturbed area with the objective of returning productivity and hydrologic function to as near natural conditions as possible.

old growth - Old growth has been defined by Thomas (1979) and adapted by the Payette Forest Plan to include the following characteristics: 1) fifteen trees per acre greater than 21 inches diameter at breast height, 2) two or more canopy layers, 3) 70 percent crown closure or more within these canopy layers, 4) at least 0.5 snags per acre, and 5) some trees with heart rot. This definition is an average condition over a stand and does not apply to every acre.

open road - An imprint on the land made for or by a four-wheel vehicle over 40 inches in width that will exist for longer than one year and is available for public use.

open road density - Miles of open road per square mile.

overmature timber - Trees that have attained full development, particularly in height, and are declining in vigor, health, and soundness.

overstory - the canopy or uppermost layer of the forest.

PACFISH - Interim strategies for managing anadromous fish-producing watersheds in Eastern Oregon and Washington, Idaho, and portions of California.

percent of maximum SDI - A measure of tree density in a stand. Crown closure starts at 25 percent maximum SDI (stand density index), full site occupancy starts at 35 percent maximum SDI.

percolation - Downward flow of water through the pores or spaces of rock or soil.

perennial stream - A stream that usually flows yearlong, except during periods of extreme drought. It has well-defined channels and shows signs of washing and scouring.

pile and burn - Natural or activity fuels that are piled by hand or with equipment and then burned. Fuels are piled in openings where fire spread can be controlled and heat will do minimal damage to surrounding trees.

pitrun - Gravel as it naturally occurs in the rock pit, without crushing or screening for size, quality, etc.

plantation - A stand of trees resulting from planting or artificially seeding an area.

PNC (potential natural community) - The community of plants and wild animals that would become established if all successional sequences were completed without interference. For forest communities, the potential natural community is an old-growth conifer stand.

precommercial thinning (PCT) - Removal of excess trees in young stands to improve health and vigor or the remaining trees. The trees removed are too small to be sold as commercial timber.

preferred alternative - The alternative identified by the Responsible Official for implementation in an EIS.

prescribed burning - The intentional application of fire to wildland fuels under predetermined conditions. This allows the fire to be confined to a specific area while producing the amount of heat and fuel consumption required to achieve planned objectives. These objectives are usually fuel reduction, site preparation for regeneration, or wildlife habitat management.

presettlement - The period from the last major climatic change (about 10,000 years ago) until settlement by Euro-Americans (1850-1900). Presettlement describes the vegetative conditions and natural processes that plants and animals adapted to prior to significant human influence. See also "range of variation" below.

proposed action - The project, activity, or decision that a federal agency intends to implement or undertake, as defined in NEPA regulations.

project area - The preliminary outline of a proposed action or activity that is in the planning stages.

pure subwatershed - A subwatershed containing only one drainage basin.

rangeland - Land on which the native vegetation is predominantly grasses, grass-like plants, forbs or shrubs.

range of variation - The range of sustainable conditions in an ecosystem that is determined by time, processes, native species, and the land itself. The components of functioning ecosystems naturally fluctuate over time, but they generally fluctuate within a natural or historic range of variation. As some components move toward or beyond the limits of that range, other components are affected as well, because they have evolved over time to interact within a limited range of conditions.

re-entry - A follow-up harvest or stand treatment done to keep the stand healthy and growing well.

reforestation - Generally refers to the re-establishment of trees through manual planting.

regeneration - The re-establishment of trees, either naturally or by planting. This term may also refer to the young trees themselves, also called reproduction.

resident fish - Freshwater species of fish that do not migrate to the ocean.

revegetation - The re-establishment of any plant cover, either naturally or by planting.

RHCA - Riparian Habitat Conservation Area. An area designated for special protection or management emphasis under PACFISH. Includes wetlands, streams, bogs, seeps, springs, lakes, landslide-prone areas and the buffer zones protecting these areas.

riparian - Pertaining to land that is next to water, where plants are dependent on a perpetual source of water.

riparian zone or riparian area - The zone of vegetation growing adjacent or in close proximity to a watercourse, lake, swamp, or spring. The vegetation is often dependent on its roots reaching the water table.

road construction - Building a new road.

road impact rating - A rating system designed to show the amount of use on a given road system in an area.

road maintenance - Minor upkeep of an existing road to keep it at its current service level.

road reconstruction - Upgrading an existing road to an improved standard.

ROS (recreation opportunity spectrum) - A classification system that categorizes land by its setting and the probable recreation experiences and opportunities it provides. The spectrum runs from primitive to roaded modified.

Rosgen stream types - A classification system developed to characterize natural streams. Characteristics include slope, gradient, channel substrate, sinuosity, entrenchment, and width/depth ratio.

rotation age - The age at which an even-aged stand of timber is considered ready for harvesting.

sale area - The geographic area covered by a timber sale.

sanitation/salvage cut - The harvest of dead, dying, defective, and insect- or disease-infested trees before they become unmerchantable.

sawtimber - Trees that are 8 inches DBH or larger that can be made into lumber.

scarification - Exposing or roughing mineral soil surface for better seed germination.

scoping - The process the Forest Service uses to determine, through public involvement, the range of issues that the planning process should address.

section 7 consultation - Consultation required by the Endangered Species Act with the appropriate jurisdictional agency for a listed species.

sediment - Soil and rock debris that has been delivered to a water body.

sensitive species - A plant or animal species that is susceptible or vulnerable to management activity impacts or habitat alteration. These species are identified by and specific to Forest Service Regions.

seral stage - The developmental phase of vegetation with characteristic structure and plant species composition.

shelterwood (SW1, SW2, SW3) - An even-aged system of timber management that removes all the mature to overmature trees in a series of two or more cuts within 30 years. In this EIS, the shelterwood regeneration cut (SW2) is designed to leave at least 15 trees per acre for seed, shade, aesthetics, and wildlife habitat. The overstory removal cut (SW3) is designed to remove most of the shelter once regeneration is established.

silviculture - The care and tending of stands of trees to meet specific objectives.

silvicultural prescription - The method selected to manage a forest stand. Silvicultural prescriptions are broken into two broad types, even-aged and uneven-aged. Even-aged prescriptions include clearcut, seed tree, and shelterwood. Uneven-aged prescriptions include individual tree selection and group selection. Other non-regeneration prescriptions include thinnings and sanitation/salvage cuttings.

site potential - The inherent potential of a site to grow timber.

site preparation - The general term for preparing a site for regeneration. It is usually accomplished with fire or mechanical disturbance.

skidding - Dragging logs from the stump to a collection point.

skid trail - A route used by loggers to drag logs from stump to landing.

skyline logging - A logging system using steel cable, tower, and a powered winch to elevate logs from their position in the woods and carry them to a point where they can be loaded on to trucks.

slash - The woody debris left on the ground after timber harvest or left after a storm, fire, or other event. Slash includes unused logs, uprooted stumps, broken stems, branches, twigs, leaves, bark, and chips.

slash filter windrow - Woody debris placed along a slope to trap and hold sediment coming off a hill or road above.

snag - A standing dead tree.

soil - A dynamic natural body on the surface of the earth in which plants grow; it is composed of mineral, organic, and living materials.

species composition - The different tree species within a stand, usually expressed as a percentage within each age class.

stand - A group of trees that occupies a specific area and is similar in species, age, and condition.

stand density - A measure of how crowded a stand is. Measures of density include: trees per acre, square feet of basal area, stand density index (SDI), and percent of maximum SDI.

stand structure - The different sizes and ages of trees within a stand.

stocking - The number of trees in a stand. Usually expressed as trees per acre or as a relative measure: well stocked, fully stocked, overstocked, or understocked.

strata - A stand delineation based on visible criteria: size class, crown density, and past management.

substrate - The bottom of a stream, usually composed of mud, sand, gravel, and/or boulders.

subwatershed - A subdivision within a watershed.

succession - The replacement in time of one plant community with another. The prior plant community (or successional stage) creates conditions that are favorable for the establishment of the next stage.

successional stage - A recognizable condition of a plant community that occurs during its development from bare ground to climax.

suited land - Forest land designated in the Forest Plan to be managed for timber production on a regulated basis.

summer range - The area essential for big game to carry out their reproductive cycles.

surface erosion - The wearing away of the land surface by running water or wind.

surface fire - A fire burning along the surface without significant movement into the understory or overstory, with flame length usually below 1 meter. Also called ground fire.

sustainability - The ability to maintain a desired condition or flow of benefits over time.

talus - Rock debris at the base of a cliff or slope.

TES (threatened, endangered, and sensitive) species - See definitions for each in this glossary.

thermal cover - A stand of coniferous trees at least 40 feet tall with an average crown closure of 70 percent or more that acts as shelter from the weather.

threatened species - Plant or animal species likely to become endangered throughout all or a specific portion of their range within the foreseeable future, as designated by the U.S. Fish and Wildlife Service.

timber sale - An amount of National Forest timber sold to and logged by a private company and logged under terms of a timber sale contract. Often called "sale" for brevity.

timber sale contract - The binding document between the Forest Service and timber purchaser that states how the sale will be logged.

timber type - Timber stands or groups of stands that have the same general vegetative composition.

Total Soil Resource Commitment (TSRC) - The conversion of a productive site to an essentially non-productive site for a period of 50 years or more. Examples are permanent skidtrails, landings, roads, campgrounds, administrative sites, and recreational trails.

tractor logging - A logging method that uses tractors or skidders to carry or drag logs from the stump to a collection point.

transitory range - Land suitable for livestock gazing on a temporary basis. For example, following timber harvest, grasses and forbs are available for grazing until the tree canopy closes again and shades them out.

treated acres - In this EIS, the treated acres equal the acres within harvest unit boundaries.

underburn - A light broadcast burn under an existing forest canopy. A prescribed fire to reduce fuels without damaging existing trees.

understory - The trees, brush, and other vegetation growing beneath the canopy or overstory in a stand of taller trees.

uneven-aged management - A silvicultural system involving manipulation of a tree stand to simultaneously maintain: continuous high forest cover, recurring regeneration of desirable species, and orderly growth and development of trees through a range of diameter or age classes. The cutting methods that create and maintain uneven-aged stands are individual tree selection and group selection.

unit (harvest or cutting) - The area of land where harvest will or has taken place.

unsuited land - Forest Service land that is not managed for timber production for various reasons.

vegetation management - Referred to in this analysis as the management of stands of trees.

vertical diversity - The diversity in a stand that results from the complexity of the aboveground structure of the vegetation. The more tiers of vegetation or the more diverse the species makeup (or both), the higher the degree of vertical diversity.

viability - The ability of a wildlife or plant population to maintain sufficient size so that it persists over time in spite of normal fluctuations in numbers; usually expressed as a probability of maintaining a specific population for a specified period.

viable population - A wildlife or plant population that contains an adequate number of reproductive individuals appropriately distributed across a planning area to ensure the long-term existence of the species.

VQO **(visual quality objective)** - A visual resource management category used to measure the amount of visual contrast with the natural landscape caused by human management activities.

water quality - Refers to the chemical, physical, or biological characteristics that describe the conditions of a river, stream, or lake.

waterbar - An earthen barrier across a road or skidtrail, used to divert water and reduce erosion. It is usually designed to allow limited vehicle passage.

watershed - A total area of land above a given point on a waterway that contributes runoff water to the flow at the point. A major subdivision of a drainage basin.

wetlands - Areas that are inundated by surface or groundwater sufficient to support vegetation or aquatic life that requires saturated conditions.

water yield - The runoff from a watershed, expressed as surface water flow.

wilderness - Undeveloped federal land that is managed to preserve its natural condition and primitive character. Congress designates Federal Wilderness areas.

windfirm - Term for trees with deep root systems that are resistant to being blown over.

windthrow - Trees uprooted by the wind.

winter range - The area where big game species find food and cover during severe winter weather.

wood fiber production - The growing, tending, harvesting, and regenerating of merchantable trees.

working group - A broad grouping of timber based on species composition and stand productivity.

yarding - Moving logs from the stump to a deck, road, or landing where they can then be loaded onto trucks.

zone of influence - The area that is economically and socio-economically influenced by Forest Service management activities.

Appendix B
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Appendix C
Monitoring and Evaluation Plan

Appendix C outlines the plan for monitoring and evaluating the implementation of the Brown Creek Timber Sale. This plan applies to Alternatives II and III in this EIS.

Monitoring and evaluation comprise the control system for implementation of the Forest Plan, including this project. Monitoring collects data to show if the project's resource objectives have been met. Evaluation reviews monitoring results and determines what adjustments are needed. Monitoring and evaluation give the decision-maker and the public information on the progress and results of implementing the activities described in this EIS.

The Payette National Forest recognizes three broad types of monitoring: baseline (existing condition), project (such as timber harvest), and validation (of Forest Plan assumptions) monitoring. See Forest Plan, Chapter V, for more background on Forest-level monitoring. The two main types of project monitoring are:

- Implementation Monitoring. This type of monitoring asks if the project meets laws, regulations, policy, and Forest Plan standards and guidelines. "Did we do what we said we were going to do?"

- Effectiveness Monitoring. This type of monitoring asks if the project's practices and mitigation meet the overall management objectives. "Did the practice/activity do what we wanted it to do?"

Funding

Funding for monitoring comes from several sources. While some comes from project Knutson-Vandenberg (KV) collections, the Forest's annual budget is the main source. Annual monitoring plans are prioritized based on annual budgets and program direction. Specific project activities would not be implemented until or unless high-priority monitoring items related to those activities can be properly funded and implemented.

Evaluation of Monitoring Results

Evaluation of monitoring results can lead to further action at the discretion of those doing the evaluating - the ID Team, district personnel, District Ranger, or Forest Supervisor. Possible actions include:

- No action.
- Referring the concern to the District Ranger for improved application of the management practice.
- Stopping the practice or activity.
- Modifying the practice, either for the project (amended decision), or the Forest (Plan amendment).
- Initiating a Forest Plan exception or amendment.
- Revising the cost or output.
- Initiating a Forest Plan revision.

Forest specialists conduct yearly monitoring of the Payette National Forest Plan accomplishments. The Brown Creek Timber Sale monitoring should tier into this annual monitoring plan. The results of this monitoring should show the specialists' conclusions and recommendations in a clear, concise, usable form, and should include the following:

- A comparison of actual outputs, costs, and services with those projected in the EIS.
- Documentation of any significant change in soil or timber productivity, or other resources.
- Recommended changes in practices, mitigation, or monitoring.
- Needs for continuing evaluation, new direction, or new research.

Duration of Monitoring

How long should monitoring last? Results of the monitoring and evaluation will answer that. When there is no longer a question whether law, regulation, policy, standards, and guidelines are being met, monitoring of that element can cease. If, however, monitoring evaluations reveal that the requirements are not being met, management needs to intervene to correct the situation.

Detailed information for each monitoring item is shown in the individual monitoring sheets that follow. Monitoring items that are high priority will occur if the project is implemented. Items that are moderate priority are needed but optional. Monitoring would occur if project is implemented and funding and personnel are available.

SOIL AND WATER MONITORING

Monitoring Item: Implementation and effectiveness monitoring of BMPs and SWCPs.

Location/Project: New Meadows Ranger District, Brown Creek Timber Sale.

Objective: Determine if site-specific BMPs and SWCPs identified in the Record of Decision and EIS are being implemented. Provide qualitative assessment of effectiveness of BMP and SWCP practices.

Priority: High.

Parameters: BMP and SWCP requirements for harvest units, system roads, temporary roads, landings, and riparian areas.

Methodology: The parameters will be observed ocularly. The project or zone hydrologist will review the Record of Decision and EIS in the office, develop a BMP checklist, and review the BMPs on the ground at the end of each operating season. Special BMPs will be listed on the BMP checklist.

Field notes and on-site photographs will be analyzed to answer the following questions:

1. Which of the Soil and Water BMPs were implemented?
2. Which of the Soil and Water BMPs appear to be effective at this time?
3. Which of the Soil and Water BMPs need to be improved?

Frequency/Duration: This monitoring will be conducted at the end of each operating season until the sale is completed.

Data Storage: Results and photos will be stored in the Soil and Water files on the McCall District.

Report: Each field visit will be documented and sent to the District Ranger via electronic mail. The final report will follow the format of the monitoring results summary form for the Payette National Forest.

Projected Costs: Cost is on an annual basis. Zone hydrologist for 8 days at $200/day = $1600.00
Zone hydro. technicians for 8 days at $130/day = $1040.00

Personnel/Skills Needed: GS-11 Hydrologist and GS-5/6 Hydrology Technicians.

Responsible Individual: Zone Hydrologist or Soil Scientist.

Responsible Official: New Meadows District Ranger.

Prepared By: David C Kennell, Hydrologist

Date: 04/97

SOIL AND WATER MONITORING

Monitoring Item: Implementation and Effectiveness of Forest Coarse Woody Debris Guidelines.

Location/Project: New Meadows Ranger District. Brown Creek Timber Sale.

Objectives: To determine if the specified amount, size, and distribution of coarse woody debris for the purpose of maintaining long-term soil productivity remains within cutting units following the completion of all harvest-related activities.

Priority: High

Parameters:
1. The amount of coarse (greater than 3" diameter), woody debris in tons per acre.
2. The size of coarse woody debris - 3 to 15 inch, and greater than 15 inch size classes.
3. Distribution (visual/photograph and by transect) of coarse woody debris.

Methodology:
1. Fuel transect methodology for amount, size, and distribution.
2. Visual and photograph to support distribution.

Frequency: One time per unit on a sample (20% of units) of various site prep/brush disposal treatments.

Duration: For the life of the sale until the sample size is achieved.

Data Storage: The results and the annual monitoring results summary will be documented and stored in the 2500 files on the McCall District. All supporting information will be stored with the documentation.

Analysis: Field notes from transects and observations and photographs will be used to determine: 1) if coarse woody debris guidelines and project prescriptions have been met, and 2) whether those guidelines are effective in contributing to the long-term maintenance of soil productivity by supplying wood throughout the unit.

Report: Document the results of the analysis and include transect data, photographs, and recommendations for changes in monitoring procedures and management prescriptions, if applicable. The report will be summarized and documented in the annual monitoring results package prepared by watershed personnel.

Projected Cost: $1200.00

Personnel/Skills Needed: Field: 2 GS-5s (Watershed/Fuels) for 4 days each and one GS-11 for one day. Office: 1 GS-11 (Soil Scientist) for 1 day, analysis and write-up.

Responsible Individual: Zone Hydrologist or Soil Scientist.

Responsible Official: New Meadows District Ranger.

Prepared By: David Kennell, Hydrologist

Date: 04/11/97

ROAD CLOSURE AND OBLITERATION MONITORING

Monitoring Item: Implementation and effectiveness of road closures and obliteration in the Brown Creek project area.

Location/Project: New Meadows Ranger District, Brown Creek Timber Sale.

Objectives: Determine whether and how road closures and obliteration were accomplished. Assess the effectiveness of road closures and obliteration related to public motorized use.

Priority: Moderate.

Parameters: Evaluate seasonal and year-round public road closures, obliteration, and enforcement effectiveness.

Methodology: Examine closed and obliterated roads for signs of unauthorized use. Analyze data from the public, law enforcement, Idaho Department of Fish and Game, and Forest Service employees to determine the effectiveness of road closures and obliteration.

Frequency: Annually.

Duration: For at least 5 years after road closures and obliteration.

Data Storage: Ranger District files.

Report: Written report following evaluation monitoring.

Cost: $500.

Monitoring Personnel: District Access Management Coordinator.

Responsible Individual: New Meadows District Ranger.

Prepared By: Jack Irish, Silviculturist and ID Team Leader

Date: 4/97

REGENERATION MONITORING

Monitoring Item: Effectiveness of regeneration efforts in all harvest units needing regeneration..

Location/Project: New Meadows Ranger District, Brown Creek Timber Sale.

Objectives: Assess success of regeneration and survival.

Priority: High.

Parameters: Regeneration establishment and survival checks.

Methodology: Conduct standard R-4 regeneration/survival checks to sample existing regeneration, plantation survival, and stocking.

Frequency: First, third, and fifth year after planting.

Duration: 5 years.

Data Storage: New Meadows District Compartment Exam files.

Report: Silvicultural Needs Report.

Cost: Current District costs average $25 per acre. Multiply by acres of regeneration harvest.

Monitoring Personnel: District silviculture personnel.

Responsible Individual: New Meadows District Ranger.

Prepared By: Jack Irish, Silviculturist and ID Team Leader

Date: 4/97

WILDLIFE SNAG MONITORING

Monitoring Item: Implementation and effectiveness of Forest snag guidelines.

Location/Project: New Meadows Ranger District. Brown Creek Timber Sale.

Objectives: To determine whether the specified amount, size, and distribution of snags remaining in cutting units following all harvest and slash-related activities, meet snag guidelines.

Priority: High.

Parameters: Guidelines specified in the Brown Creek EIS for maintenance of snag habitat.

Methodology: Snag density on units will be sampled using fuel transect methodology for amount, size, and distribution. Notes will be taken as to snag distribution per harvest unit. Notes will be brief, but provide the reader with an idea of how snags are distributed across the unit and to what degree riparian areas are contributing to snag densities in units.

Frequency: One time per unit on a sample basis (20% of all harvest units). Sampling will include representative cover types.

Duration: Until all units to be sampled are completed.

Data Storage: New Meadows District Compartment Exam files.

Report: Notes, and any supporting documentation (transect results, photos...).

Cost: Field - $500.00
Office - $350 for wildlife biologist coordination/analysis/report.

Monitoring Personnel: District silviculture personnel.

Responsible Individual: District Wildlife Biologist.

Type of Monitoring: Effectiveness.

Prepared By: Butch Gould, District Wildlife Biologist

Date: 4/97

WILDLIFE HABITAT PROTECTION MONITORING

Monitoring Item: Pre-harvest and harvest coordination with Timber Sale Administrator (TSA) to ensure that wildlife habitat protection measures are implemented.

Location/Project: New Meadows Ranger District. Brown Creek Timber Sale.

Objectives: To ensure that project is properly implemented to meet wildlife habitat concerns, and that wildlife expertise is available when required.

Priority: High.

Parameters: Guidelines specified in the Brown Creek EIS for protection of wildlife habitat.

Methodology: Meet with TSA to review sale package. During sale implementation, provide needed expertise in the field on TES and other key wildlife habitat requirements, snag retention, elk calving restrictions, etc. Be available and on call to assist TSA when requested.

Frequency: One time pre-harvest. As need arises during harvest.

Duration: Until sale is completed.

Data Storage: New Meadows District Silviculture files.

Report: Document results of pre-harvest and harvest coordination with the TSA. Include all supporting information (transects, sightings, etc.).

Cost: $500.

Monitoring Personnel: One GS-11 East Zone Wildlife Biologist for 3 days.

Responsible Individual: District Wildlife Biologist.

Type of Monitoring: Implementation.

Prepared By: Butch Gould, District Wildlife Biologist

Date: 4/97

Appendix D
Best Management Practices
For Soil And Water Conservation

FEDERAL CONSISTENCY CHECKLIST FOR PLANNED PROJECTS

Pertinent Sections of the Water Quality Standards are referenced and need to be used in conjunction with the checklist

1 Have you identified which nonpoint source activities regulated by the Idaho Water Quality Standards are within the project area?

Yes. Nonpoint sources identified within the project area are: Timber harvest, and forest road reconstruction.
IDAPA 16.01.2003,23. - Nonpoint source definition.

2 Have you identified the state-approved BMPs for each nonpoint source activity?

Yes. See attached list of approved BMPs

IDAPA 16.01.2300,.05.

3 For nonpoint source activities which do not have approved BMPs, have you identified practices that demonstrate a knowledgeable and reasonable effort to minimize resulting water quality impacts?

Yes. (Note: BMPS identified in the *Idaho Agricultural Pollution Abatement Plan* (Idaho Dept. of Health and Welfare, 1983) and the *Best Management Practices for Road Activities*, Volume I and II, (Levinski, 1982) constitute knowledgeable and reasonable effort for these activities.)

IDAPA 16.01.2300,04.a. - Nonpoint source restrictions.

4 Have you provided a monitoring plan which, when implemented, will provide adequate information to determine the effectiveness of the approved or specialized BMPs in protecting the beneficial uses of water?

Yes. The monitoring plan is included in Appendix C of this EIS

IDAPA 16.01.2300,04.c.II. - Monitoring plan requirements.

5 Have you provided a process (including feedback from water quality monitoring) for modifying the approved or specialized BMPs in order to protect beneficial uses of water?

Yes. A monitoring plan is included in Appendix C. A feedback loop is established on the Payette Forest where BMP monitoring for implementation and effectiveness is reported to DEQ yearly, and BMP results are used to modify practices on specific projects. This protects the beneficial uses identified for the project.

IDAPA 16.01.2300,04.c.III. - Modification of BMPs.

6 Have you identified the "appropriate and existing beneficial uses" of water for the water bodies in the project area?

Yes. The beneficial uses for project area streams are: cold water biota, salmonid spawning, domestic and agricultural water supply, and primary and secondary contact recreation.
IDAPA 16.01.2300,01. - Definition of appropriate beneficial uses.

7. Have you determined if a Water Quality Limited water body has been designated within the project area?

Yes. The Little Salmon River from Round Valley Creek to confluence with the Main Salmon was listed as a Water Quality Limited Segment in the 1998 303(D) Report.

8. Have you determined if an Outstanding Resource Water (ORW) has been designated in the project area?

Yes. There are no Outstanding Resource Waters in the project areas.

IDAPA 16.01.2003,31

9. Have you identified the water quality standards and criteria applicable to protecting the "appropriate beneficial uses"?

Yes. Administrative policies and standards of the State Water Quality Standards require protection for appropriate beneficial uses.

IDAPA 16.01.2200, - 2280, - Water Quality Criteria.

10. Does pre-project planning and design include an analysis of water quality resulting from implementation of the proposed activity sufficient to predict exceedance of water quality criteria for the appropriate beneficial uses(s), or in the absence of such criteria, sufficient to predict the potential for beneficial use impairment?

Yes. The analysis includes an evaluation of current status and predicted condition of beneficial uses in the subject watershed, and addresses physiographic conditions such as landtype, soils, and vegetation that influence erosion and mass wasting. The analysis addresses changes in habitat that may impact the beneficial uses as a result of nonpoint source activities. The analysis of beneficial use impairment shall utilize parameters and protocols outlined in the Statewide Coordinated Monitoring Plan.

IDAPA 16.01.2050,02 - Administrative policy.
IDAPA 16.01.2300,02 - Limitation to discharge of pollutants.

IDAHO WATER DESIGNATION ABSTRACTS

Surface Water Quality Beneficial Use Designations*

Agricultural Water Supply: Waters that are suitable or intended to be made suitable for the irrigation of crops or as drinking water for livestock (Source: IDAPA 16.01.0200,01a). *Criteria:* General surface water quality criteria. Narrative or "free-form" criteria for hazardous materials, deleterious materials, floating, suspended, or submerged matter, excess nutrients, oxygen demanding materials and sediment. Numeric criteria for radioactive materials (Source: IDAPA 16.01.02250,03.a).

Domestic Water Supply: Waters that are suitable or intended to be made suitable for drinking water supplies (Source IDAPA 16.01.02100,01.b). *Criteria:* Numeric criteria for specific constituents (Source: IDAPA 16.01.02250,03.a).

Cold Water Biota: Waters which are suitable or intended to be made suitable for protection and maintenance of viable communities of aquatic organisms and populations of significant aquatic species which have optimal growing

temperatures below 18 degrees C (Source: IDAPA 16.01.02100,02.a). *Criteria*: Numeric criteria for pH, dissolved oxygen, gas saturation, resadual chlorine, water temperature and total ammonia (Source: IDAPA 16.01.02100,02.a and b).

Salmonid Spawning: Waters which provide, or could provide, a habitat for active self-propagating populations of salmonid fishes (Source: IDAPA 16.01.0200,02.c). *Criteria*: Numeric criteria for pH, gas saturation, residual chlorine, dissolved oxygen, water temperature and total ammonia (Source: IDAPA 16.01.02250,02.a and d).

Primary Contact Recreation: Surface waters which are suitable, or are intended to be made suitable, for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such waters include, but are not restricted to, those used for swimming, water-skiing or skin diving (Source: IDAPA 16.01.02100,03.a). *Criteria*: Numeric criteria applied between May 1st and September 30th (recreation season) for fecal coliform bacteria (Source: IDAPA 16.01.02250,01.a).

Secondary Contact Recreation: Surface waters which are suitable, or are intended to be made suitable, for recreational uses on or about the water and which are not included in the primary contact category. These waters may be used for fishing, boating, wading, and other activities where ingestion of raw water is not probable (Source: IDAPA 16.01.02100,04). *Criteria*: Numeric criteria for fecal coliform bacteria (Source: IDAPA 16.01.02250, 01.b).

Wildlife Habitats: Waters which are suitable, or are intended to be made suitable, for wildlife habitats. This use applies to all surface waters of the state (Source: IDAPA 16.01.02100,04). *Criteria*: General surface water quality criteria (Source: IDAPA 16.01.02200).

Aesthetics: This use applies to all surface waters of the state (Source: IDAPA 16.01.02100,05). *Criteria*: General surface water quality criteria (Source: IDAPA 16.01.02200).

* Different criteria apply to stream segments or water bodies that have been assigned site-specific criteria.

Groundwater Use Classifications

Agricultural Water Supplies: Waters which are suitable, or intended to be made suitable, for the irrigation of crops or as drinking water for livestock (Source: IDAPA 16.01.02250,03.a). *Criteria*: General groundwater quality criteria. Narrative or "free-form" criteria for hazardous materials and deleterious materials (Source: IDAPA 16.01.02299,04.a and b). Numeric criteria for radioactive materials (Source: IDAPA 16.01.02299,04.c and d).

Domestic Water Supplies: Waters which are suitable, or intended to be made suitable, for drinking water supplies (Source: IDAPA 16.01.02299,04.a and b). *Criteria*: Numeric criteria for specific constituents (Source: IDAPA 16.01.02250,03.a).

Special Designations

Special Resource Water: Those specific segments or bodies of water that are recognized as needing intensive protection: a) to preserve outstanding or unique characteristics, or b) to maintain current beneficial use (Source: IDAPA 16.01.02003,54). For special resource waters, new or modified point sources of pollution can not be allowed unless there is no measurable change in the quality of the receiving water body after allowing for an applicable mixing zone.

Designations as a special resource water recognizes at least one of the following characteristics: a) the water is of outstanding high quality, exceeding both criteria for primary contact recreation and cold water biota; b) the water is of unique ecological significance; c) the water possesses outstanding recreational or aesthetic qualities; d) intensive protection of the quality of the water is in paramount interest of the people within a State or National Wild and

Scenic River System; or e) intensive protection of the quality of the water is necessary to maintain an existing, but jeopardized beneficial use (Source: IDAPA 16.01.02054,01).

Water Quality Limited Segment: Any segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by sections 301(b) and 306 of the Clean Water Act (Source: 40 CFR Chapter 1, Section 130,2(j)). Water quality limited segments are to be prioritized for total maximum daily load development. Designation as a water quality limited segment is based on water quality data.

Wild and Scenic River: Under the Wild and Scenic Rivers Act (P.L. 90-542 as amended), a river or a section of a river may be classified as a wild river, a scenic river or recreational river. *Wild Rivers* are those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds and shorelines essentially primitive and unpolluted. They represent vestiges of primitive America. *Scenic Rivers* are those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. *Recreational Rivers* are those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past (Source: Wild and Scenic Rivers Act, Section 2 (b)).

The Wild and Scenic Rivers Act prohibits the Federal Energy Regulatory Commission from licensing hydropower projects on eligible or designated river segments; withdraws public lands within authorized boundaries from entry, sale, or deposition; limits mineral extraction within designated or study river corridors; and requires that management actions necessary to protect such rivers be taken.

BMP EFFECTIVENESS RATINGS

This part of the appendix describes standard Best Management Practices (BMPs) commonly used on the Payette National Forest to minimize effects of timber management and associated activities on soil and water resources. The purpose of Table D-1 is to:

1. establish the connection between the SWCP employed by the Forest Service and the Rules and Regulations pertaining to the Idaho Forest Practices Act, and

2. provide a qualitative assessment of expected effectiveness that the implemented BMP will have on preventing or reducing impacts on soil and water resources.

The BMPs described herein are tiered to the Soil and Water Conservation Practices (SWCP) Handbook (FSH 2509.22) which is a supplemental document to the Forest Plan. This appendix does not cover all possible practices contained in the Forest Service Handbook, but it does represent the more common practices used to meet State and Forest management objectives. All reasonable practices will be implemented where applicable in the design of selected projects. The District Ranger (through the Presale Forester) is responsible for ensuring that all relevant SWCPs are incorporated into proper B and/or C Timber Sale Contract provisions. The Contracting Officer, through official representative(s), is responsible for ensuring that these provisions are properly administered on the ground.

Each Soil and Water Conservation Practice is described as follows:

Title - Includes the sequential number of the SWCP and a brief title.

Objective - Describes the SWCP objective(s) and the desired results for protecting soil and water resources.

Effectiveness - Provides a qualitative assessment of expected effectiveness that the implemented practice will have on preventing or reducing impacts on soil and water resources. The SWCP effectiveness rating is based on the following criteria:

a. Literature/Research (must be applicable to area).
b. Administrative studies (local or within similar ecosystem).
c. Experience (judgment of qualified personnel by education and/or experience).
d. Fact (obvious by reasoned, logical, response).

The expected effectiveness of the SWCP is rated either High, Moderate or Low.

HIGH: Practice is highly effective (greater than 90%), meets one or more of the rating criteria and documentation is available.

MODERATE: Documentation shows that practice is 75% to 90% effective, or Logic indicates that practice is highly effective, but there is no documentation to back it up. Implementation and effectiveness of this practice will be monitored and the practice will be modified if necessary to achieve the mitigation objective.

LOW: Effectiveness is unknown or unverified, and there is little or no documentation, or applied logic is uncertain and practice is estimated to be less than 60% effective. This practice is speculative and needs both effectiveness and validation monitoring.

Compliance - Identifies specific Idaho Forest Practices Act Rule(s) that the implemented practice would meet or exceed.

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Table D-1. BMP Crosswalk

BMP Description	Purpose or Objective	Effectiveness and IFPA Compliance	Timber Sale Contract Provision
SWCP 11.05 - Wetlands analysis and evaluation.	Maintain wetland functions and avoid adverse soil and water resource impacts associated with the destruction or alteration of wetlands, bogs, and wet meadows.	HIGH. IFPA Rule 3.h.iii	
SWCP 11.07, 11.11 - Oil spill contingency plan. Petroleum storage, delivery facilities, and management.	Prevent contamination of soil and water resources resulting from leaking delivery systems and storage facilities.	HIGH. IFPA Rules 2.j.i and 2.j.ii	C6.341, B6.34
SWCP 11.09 - Management by closure to use.	Exclude activities that could result in damages to facilities or degradation of soil and water resources.	HIGH. IFPA Rule 4.d.v(c)	
SWCP 11.14 - Management of snow survey sites.	Protect snow courses and related data sites from effects by land management activities.	HIGH. No related IFPA rules.	
SWCP 13.02 and 14.07 - Slope limitations for tractor operation. Determining tractor loggable ground.	To reduce soil displacement, erosion, and sedimentation by restricting equipment operations to slopes that do not exceed 45 percent gradient.	HIGH. IFPA Rules 3.c.i and 3.c.ii	B6.6422
SWCP 13.03 - Tractor operation exclusion from wetlands, bogs, and wet meadows.	Avoid adverse soil and water resource impacts associated with the destruction or modification of wetlands, bogs, and wet meadows.	HIGH. IFPA Rule 3.h.iii	B6.61, C6.61#
SWCP 13.04 - Revegetation of surface-disturbed areas.	Protect soil productivity and water quality by minimizing soil erosion.	MODERATE. IFPA Rules 3.d.iii, 3.e.i, and 3.e.ii	C6.607#
SWCP 13.05 - Slash protection during and after slash windrowing.	To reduce erosion and sedimentation from road surfaces and fill slopes by installing windrows below the fill slope.	MODERATE. No related IFPA rule	A-20, B6.6
SWCP 13.06 - Soil moisture limitations for tractor operation.	Minimize soil compaction, puddling, rutting, and gullying with resultant sediment production and loss of soil productivity.	HIGH. No related IFPA rule	A-20, B6.6, B6.42, B6.422 C6.42, C6.425

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BMP Description	Purpose or Objective	Effectiveness and IFPA Compliance	Timber Sale Contract Provision
SWCP 14.02, 14.08, 14.10 - Timber harvest unit design, tractor skidding design, and log landing location and design.	Design harvest units to maintain soil productivity and water quality by locating landings and skidding patterns to best fit the terrain, avoiding soil erosion, and minimizing surface disturbance.	MODERATE. IFPA Rules 3.c.iii, 3.d.i, and 3.d.ii	B6.422, C6.6, C6.410#, C6.411, C6.422
SWCP 14.03 - Use of sale area maps for designating soil and water protection needs.	Delineate protection areas and special treatment areas to ensure their recognition, consideration, and protection on the ground.	HIGH. No related IFPA rule	B1.1, B6.5, B6.6, C6.51, C6.52
SWCP 14.04, 15.04 - Limiting the operating period of timber sale activities. Timing of construction activities.	Minimize erosion, sedimentation, and loss in soil productivity by ensuring activities are done in a timely manner when ground conditions are such that detrimental impacts can be avoided.	MODERATE. IFPA Rule 4.c.ix	A-20, B6.31, C6.3, C6.30#, C6.311, C6.312#
SWCP 14.05, 15.05 - Protection of unstable areas. Slope stabilization and prevention of mass movements.	Identify and protect unstable areas so as to avoid triggering mass movements and resultant erosion and sedimentation.	HIGH. IFPA Rule 3.d.ii	
SWCP 14.06, 15.12 - Riparian area designation. Control of construction in riparian areas.	Minimize adverse effects on riparian areas with prescriptions for nearby logging and related land disturbance activities.	HIGH. IFPA Rules 3.g.ii, 3.g.iii, 3.g.iv, 3.f.iv	B6.5, C6.51#, C6.52#
SWCP 14.09 - Suspend leading end of logs during skyline or cable yarding.	Protect the soil from excessive disturbance and erosion and to maintain the integrity of riparian and other sensitive areas.	MODERATE. IFPA Rule 3.g.ii	C6.42#
SWCP 14.11, 14.12, 14.15 - Erosion prevention and control on log landings, skidtrails, and during timber sale operations.	Minimize soil erosion and subsequent sedimentation derived from landings and skidtrails for protection of water quality and soil productivity.	MODERATE. IFPA Rules 3.e.i, 3.e.ii, and 3.d.iii	B4.225, B6.64 B6.422, B6.6, B6.66, B6.63, C6.3, C6.312, C6.6, C6.601, C6.607#, C6.608#, C.6.609#
SWCP 14.13, 14.14 - Special erosion prevention measures and revegetation of areas disturbed by harvest activities.	Establish vegetative cover on disturbed sites to reduce erosion and sedimentation from areas where normal revegetation methods or contract provisions do not apply.	MODERATE. IFPA Rules 3.d.iii and 3.e.i	B6.6, C6.6, C6.601
SWCP 14.16 - Meadow protection during timber harvest.	Avoid damage to the ground cover, soil, and water in meadows.	HIGH. No related IFPA rule	
SWCP 14.17, 15.19 - Stream channel protection. Controlling in-channel excavation. Stream bank protection.	Protect natural stream flows and streamside vegetation by maintaining unobstructed passage of stream flows and by reducing sediments and other stream pollutants.	HIGH. IFPA Rules 3.f.i, 3.f.ii, 3.g.i, 3.g.ii	B6.5, B6.6, B6.62, C6.51, C6.52#

BMP Description	Purpose or Objective	Effectiveness and IFPA Compliance	Timber Sale Contract Provision
SWCP 14.18 - Erosion control structure maintenance.	Ensure that erosion control structures are stabilized and working effectively.	HIGH. No related IFPA rules	B6.6, B6.66, B4.225
SWCP 14.19 - Acceptance of timber sale erosion control measures before sale closure.	Ensure the adequacy of required timber sale erosion control work.	HIGH. No related IFPA rules	B6.6, B6.63, B6.64, B6.65, B6.66, C6.6
SWCP 14.20 - Slash treatment in sensitive areas.	Protect water quality and soil productivity in sensitive tributary areas from the use of mechanized equipment for slash disposal.	HIGH. No related IFPA rules	C6.7
SWCP 14.22 - Modification of the timber sale contract.	Modify the timber sale contract if new circumstances or conditions indicate that planned activities will cause irreversible damage to soil, water, or watershed values.	HIGH. No related IFPA rules	B8.3, C8.3, C3.312
SWCP 15.02 - General guidelines for the location and design of roads and trails.	Locate and design roads and trails with minimal soil and water resource impacts while considering all design criteria.	MODERATE. IFPA Rules 4.b.i, 4.b.ii, 4.b.iii, 4.c.i	C5.2
SWCP 15.03 - Road and trail erosion control plan.	Prevent, limit, and mitigate erosion and sedimentation through timely implementation of erosion control practices prior to and during ground-disturbing activities.	MODERATE. No related IFPA rules1	
SWCP 15.06 - Mitigation of surface erosion and stabilization of slopes.	Minimize soil erosion and sedimentation from road cut slopes, fill slopes, and travelways during and after construction.	MODERATE. IFPA Rules 4.c.iii, 4.d.ii	C6.607#
SWCP 15.07 - Control of permanent road drainage.	Minimize the erosive effects of concentrated water and the degradation of water quality through proper design and construction of road drainage systems and control structures.	MODERATE. IFPA Rules 4.c.viii and 4.d.iii; a, b.	
SWCP 15.08 - Pioneer road construction.	Minimize sediment production and mass wasting associated with pioneer road construction.	MODERATE. No related IFPA rule	
SWCP 15.09 - Timely erosion control measures for incomplete roads and stream crossings.	To minimize accelerated erosion and sedimentation from disturbed ground created by ongoing construction projects.	MODERATE. IFPA Rules 4.c.ii, 4.c.iii, 4.c.iv, 4.d.iii	C6.30#

BMP Description	Purpose or Objective	Effectiveness and IFPA Compliance	Timber Sale Contract Provision
SWCP 15.10, 15.18 - Control of road construction excavation and sidecast. Disposal of right-of-way and roadside debris.	Reduce sedimentation from unconsolidated excavated and sidecast material and construction slash caused by road construction, reconstruction, or maintenance.	HIGH. IFPA Rules 4.c.iii, 4.c.iv, and 4.d.i	
SWCP 15.11 - Servicing and refueling of equipment.	Prevent contamination of water from accidental spills of fuels, lubricants, bitumens, raw sewage, wash water, and other harmful materials.	HIGH. IFPA Rules 2.j.i and 2.j.ii	
SWCP 15.14 - Diversion of flows around construction sites.	Minimize downstream sedimentation by ensuring that all stream diversions are carefully planned.	HIGH. No related IFPA rules	
SWCP 15.15 - Stream crossings on temporary roads.	Keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish channels.	MODERATE. No related IFPA rules	
SWCP 15.16 - Bridge and culvert installation (disposition of surplus material).	Minimize sedimentation and turbidity resulting from excavation for in-channel structures.	HIGH. No related IFPA rules	
SWCP 15.17 - Regulation of borrow pits, gravel sources, and quarries.	Minimize sediment production from borrow pits, gravel sources, and quarries, and limit channel disturbances in those gravel sources suitable for development in flood plains.	HIGH. No related IFPA rules	
SWCP 15.21 - Maintenance of roads.	Conduct regular preventive maintenance operations to avoid deterioration of the road surface and minimize disturbance to water quality and fish habitat.	MODERATE. IFPA Rules 4.d.i. and 4.d.ii	
SWCP 15.22 - Road surface treatment to prevent loss of materials.	Minimize the erosion of road surface materials and reduce the likelihood of sediment production.	HIGH. No related IFPA rules	
SWCP 15.23 - Traffic control during wet periods.	Reduce the potential for road surface disturbance during wet weather and reduce sedimentation probability.	MODERATE. No related IFPA rules	
SWCP 15.24 - Snow removal controls.	Minimize impacts of snow melt on road surfaces and embankments and reduce the probability of sediment production resulting from snow removal operations.	MODERATE. No related IFPA rules	

BMP Description	Purpose or Objective	Effectiveness and IFPA Compliance	Timber Sale Contract Provision
SWCP 15.25 - Obliteration of temporary roads.	Reduce sediment generated from temporary roads by obliterating them upon completion of their intended use.	HIGH. IFPA Rule 4.d.v.	
SWCP 15.27 - Trail maintenance and rehabilitation.	Minimize soil erosion and water quality problems resulting from trail erosion.	HIGH. No related rules	
SWCP 18.02 - Formulation of fire prescriptions.	Provide for soil and water resource protection while achieving the management objective through the use of prescribed fire.	HIGH. No related IFPA rules	
SWCP 18.03 - Protection of soil and water from prescribed burning.	Maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface water.	HIGH. No related IFPA rules	

NONPOINT SOURCE CONTROL PROGRAM 319 UPDATE

D ision of Environmental Quality (DEQ)

Idaho Department of Health and Welfare DEQ is responsible for the overall coordination and implementation of the state's nonpoint source programs. Implementation of the Nonpoint Source Management Program is accomplished through interagency coordination with local, state, and federal natural resource agencies. The nonpoint source programs are implemented with assistance from public advisory committees, which provide continuous feedback on the direction and acceptability of the nonpoint source control strategy.

The nonpoint source control strategy is based on the feedback loop concept. BMPs are the backbone of this control program. A process for site-specific application of BMPs is developed under each nonpoint source program, and monitoring is used to evaluate the effectiveness of the BMPs. Changes to BMPs are recommended when they do not support the beneficial uses; monitoring continues to ensure that the revised practices are adequate (The 1992 Idaho Water Quality Status Report, Idaho Department of Health and Welfare, DEQ, December 1992). The nonpoint source program places emphasis on the following actions:

- Building on the strength of existing nonpoint programs, such as agriculture and forestry.
- Focusing evaluation and monitoring techniques on beneficial use assessments and BMP effectiveness.
- Creating public awareness and support through information, education, and citizen participation.
- Institutionalizing the feedback loop components in state and federal agency programs using the Clean Water Act requirements.
- Integrating the nonpoint source control program with implementation of the Antidegradation Policy.

See Figure D-1 below for a diagram of the feedback loop process for nonpoint source control.

Figure D-1. Feedback Loop Process for Nonpoint Source Control

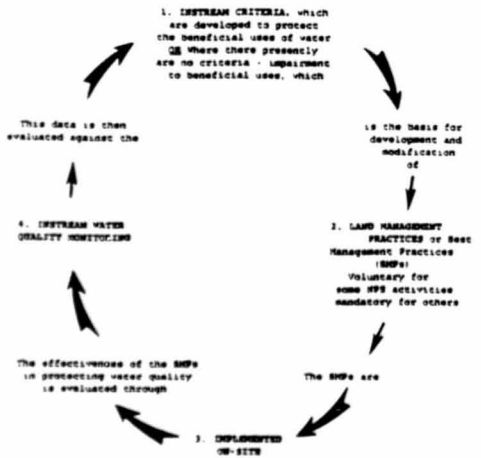

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Table D-2. Landtypes in the Brown Creek, Sixmile, and Middle Little Salmon Subwatersheds

LANDTYPE	SPECIAL FEATURES	EROSION AND STABILITY HAZARDS
DEPOSITIONAL LANDS		
104: Valley Train Land - deep skeletal and coarse loamy soils. Bottom and lower side slopes of glacial troughs. Includes alluvium, terrace and morraine remnants, and glacial outwash.	25-40% yield to streamflow. Large inflow from adjacent lands, so surface flow is common during snowmelt and occasional during summer storms. Important flow regulator.	Most erosion hazards mod-low. Mass stability hazards low to mod low. Important sediment buffer. Upper stream reaches well-armored, but lower reaches susceptible to bank cutting.
106-2: Lateral Moraine Land - deep skeletal sandy and loamy soils. Associated with major glacial valleys. Depositions above and on lateral margins of valley glaciers.	<30% yield to streamflow, most as subsurface. Some surface flow during snowmelt, little during summer storms.	Erosion hazards moderate. Natural stability hazards low, cut and fill slope stability hazards mod low to moderate.
CRYOPLANATED LANDS		
109a: Weakly Dissected Cryoplanated Mountain Slopes. Lands formed by snow and ice field action. Materials removed by overland flow tend to be replaced by mass wasting.	35-60% yield to streamflow. <10% overland flow during summer storms under normal conditions. Generally deep subsurface flow.	Moderate inherent erosion hazard. Cut and fill erosion hazard mod to mod high. Mass stability hazards generally moderate.
109-1: Volcanic cryoplanated ridge lands - moderately deep, fine-textured soils.	Lands formed by snow and ice field action. High yield (up to 75%) to streamflow.	Erosion hazards low to mod. Stability hazards low to mod low. Damage from livestock use common - rehab potential high.
109-2: Granitic cryoplanated ridgelands - shallow and moderately deep skeletal sandy and loamy soils.	Ice action removed some material. High water producer, high overland flow. Little subsurface storage.	Mod to mod high erosion hazards - high sediment producer, Stab hazards mod low to mod.
STRONGLY GLACIATED LANDS		
111a: Weakly Dissected GlacialTrough Lands - deep skeletal sandy and loamy soils.	Oversteepened sideslopes of U-shaped valleys. Parallel drainage >1500 feet apart. 20-55% yield as streamflow. <30% overland flow.	Moderate erosion hazards. Mod low mass stability hazards except mod high stab hazards where seeps and springs are encountered in roadcuts.
111a: Weakly Dissected GlacialTrough Lands - deep skeletal sandy and loamy soils.	Oversteepened sideslopes of U-shaped valleys. Parallel drainage >1500 feet apart. 20-55% yield as streamflow. <30% overland flow.	Moderate erosion hazards. Mod low mass stability hazards except mod high stab hazards where seeps and springs are encountered in roadcuts.
111d: Steep Rocky Glacial Headland - shallow and moderately deep skeletal sandy and loamy soils. Steep, rocky, ice-plucked cirque headlands of minor drainages.	50-80% yield to streamflow. Potential for overland flow from snowmelt and high intensity storms very high.	Erosion hazards generally mod high, due to shallow soils and extreme amounts of surface water. Stability hazards generally mod low.

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LANDTYPE	SPECIAL FEATURES	EROSION AND STABILITY HAZARDS
STRONGLY GLACIATED LANDS		
111g: Rejuvenated Glacial Trough Lands - moderately deep loamy skeletal and sandy skeletal soils. Sides of drainages subjected to alpine glaciation - U-shape being altered to V-shape by new erosion.	Weakly developed parallel drainage system. Much bedrock exposure. 35- 55% yield to streamflow. Overland flow as high as 25% with high intensity storm.	Erosion hazards moderate to moderately high. Most stability hazards mod low. Steep slopes mean most sediment is delivered to main stems. Overgrazing can have serious impacts on this unit.
111s: Scoured Glacial trough Land - shallow and moderately deep skeletal, sandy and loamy soils. Scoured side slopes of glacial troughs.	Much barren rock outcrop. Highest water yielding landtype. Extremely high surface runoff potential.	Erosion hazards mod to mod high. Stability hazards generally low.
113: Rocky Ridge land	Steep, actively eroding lands. Up to 80% runoff from high intensity storm.	Inherent erosion - mod high to high. Surface erosion - moderate. Mass stability - low to mod low.
118: Rocky Glacial Scoured Land - shallow and deep loamy soils.	Glacially scoured granitic bedrock, patches of glacial drift. Low relief and gentle slopes. 50 to 80% yield as streamflow. High overland flow.	Mostly moderate erosion hazards and mostly low stability hazards. Patches of glacial drift important buffers for adjacent high runoff areas.
118-2: Glacial Scoured Mountain Slope Lands - moderately deep and deep coarse loamy and loamy skeletal soils.	Gentle south-facing slopes lightly scoured by glacial action, subsequently cryoplanated. 50-80% yield as streamflow, moderate overland flow.	Moderate erosion hazards, low stability hazards.
FLUVIAL LANDS		
120b-7: Moderately Dissected Mountain Slope Lands - moderately deep, coarse loamy and clayey soils. Meta-granitic slopes incised by drainages 500-1500 feet apart.	25-50% yield to streamflow. As much as 20% surface runoff from high intensity storms on south facing slopes. Subsurface flow likely to be concentrated in or near draws.	Erosion hazards mod to mod high (highest on south aspects) Stab hazards generally low to mod low, except moderate for slumps in areas having clayey soils.

Appendix E
Alternative And Silvicultural Information

Table E-1. Alternative II Logging Systems, Prescriptions, and Volumes by Unit

Unit #	Tractor Acres	Skyline Acres	Heli. Acres	Prescription	Vol./acre (MBF)	Total Vol. (MBF)
102	18	--	--	EAR	7.4	133
114	23	--	--	EAR	21.3	490
206	6	--	--	EAR	22.1	133
501	--	--	6	EAR	15.8	95
502	--	8	--	FS	6.2	50
319	14	--	--	EAR	22.1	309
321	12	--	--	EAR	22.1	265
417	--	--	2	EAR	21.3	43
410	--	--	18	EAR	21.3	383
408	--	--	13	EAR	21.3	277
409	10	--	--	EAR	21.3	213
411	12	--	--	EAR	22.1	265
430	--	--	1	EAR	103.2	103
505	9	--	--	EAR	22.1	199
521	--	8	--	FS	4.8	38
609	--	--	18	EAR	21.3	383
719	6	--	--	EAR	22.1	133
721	17	--	--	FS	4.3	73
726	16	--	--	EAR	10.1	162
810	20	--	--	PCC	10.4	208
911	--	--	37	EAR	27.8	1029
913	--	--	16	EAR	27.8	445
Totals	163	16	111	--	--	5,429

EAR = Even-aged Regeneration - 237 acres
FS = Free Selection - 33 acres
PCC = Patch Clearcut (2 to 3 acres each) - 20 acres

Table E-2. Alternative II Reforestation and Slash Disposal/Site Prep Acres by Unit

Unit No.	Reforestation Acres		Slash Disposal / Site Preparation Acres				
	Planted	Natural	Tractor	Excavator	Broadcast Burn	Lop and Scatter	Total
102	12	0	12	6	0	0	18
114	20	0	15	8	0	0	23
206	6	0	6	0	0	0	6
501	6	0	0	0	6	0	6
319	14	0	7	7	0	0	14
502	4	0	0	8	0	0	8
321	12	0	6	6	0	0	12
417	2	0	0	0	0	2*	2
410	18	0	0	12	0	6	18
408	13	0	0	0	13	0	13
409	10	0	4	6	0	0	10
411	12	0	7	5	0	0	12
430	1	0	0	0	0	1*	1
505	9	0	9	0	0	0	9
521	2	2	0	8	0	0	8
609	18	0	0	0	18	0	18
719	6	0	6	0	0	0	6
721	4	5	17	0	0	0	17
726	16	0	16	0	0	0	16
810	20	0	20	0	0	0	20
911	37	0	0	0	37	0	37
913	16	0	0	0	16	0	16
Totals	258	7	125	66	90	9	290

*YUM tops YUM=yard unmerchantable material

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Table E-3. Alternative III Logging Systems, Prescriptions, and Volumes by Unit

Unit #	Tractor Acres	Skyline Acres	Heli. Acres	Prescription	Vol./acre (MBF)	Total Vol. (MBF)
102	18	--	--	EAR	7.4	133
114	23	--	--	EAR	21.3	490
206	6	--	--	EAR	22.1	133
502	--	8	--	FS	6.2	50
319	14	--	--	EAR	22.1	309
321	12	--	--	EAR	22.1	265
409	10	--	--	EAR	21.3	213
411	12	--	--	EAR	22.1	265
505	9	--	--	EAR	22.1	199
521	--	8	--	FS	4.8	38
719	6	--	--	EAR	22.1	133
721	17	--	--	FS	4.3	73
726	16	--	--	EAR	10.1	162
810	20	--	--	PCC	10.4	208
Totals	163	16		--	--	2,571

EAR = Even-aged Regeneration - 126 acres
FS = Free Selection - 33 acres
PCC = Patch Clearcut (2 to 3 acres each) - 20 acres

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Table E-4. Alternative III Reforestation and Slash Disposal/Site Prep Acres by Unit

Unit No.	Reforestation Acres		Slash Disposal/Site Preparation Acres				
	Planted	Natural	Tractor	Excavator	Broadcast Burn	Lop and Scatter	Total
102	12	0	12	6	0	0	18
114	20	0	15	8	0	0	23
206	6	0	6	0	0	0	6
319	14	0	7	7	0	0	14
502	4	0	0	8	0	0	8
321	12	0	6	6	0	0	12
409	10	0	4	6	0	0	10
411	12	0	7	5	0	0	12
505	9	0	9	0	0	0	9
521	2	2	0	8	0	0	8
719	6	0	6	0	0	0	6
721	4	5	17	0	0	0	17
726	16	0	16	0	0	0	16
810	20	0	20	0	0	0	20
Totals	147	7	125	54	0	0	179

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Strata Descriptions

Note: Strata numbers 20 - 35 are delineated only on forest lands determined to be suited or tentatively suited.

Strata 20 — CLEARCUTS - harvest areas with seedlings or 0-10% stocking of trees visible on photo. These stands are generally 0-10 years old, and may have a large component of grass or brush present.

Strata 21 — PARTIAL CUTS - cutover areas with a light to moderate residual stocking, and 10-50% crown coverage. These are stands that have been harvested within the past 35 years. Stand age is generally 80-120 years. These are typically seed tree or removal type cuts.

Strata 22 — PARTIAL CUTS - cutover areas with a moderate to heavy residual stocking, and >50% crown coverage. These stands have been harvested within the past 35 years. The stand age is generally 70-100 years. These are typically commercial thinnings.

Strata 23 — MATURE/OVERMATURE - these are unmanaged dense, mulit-storied stands with coverage greater than 70%. The majority of trees, >50%, are large diameter, mature and overmature individuals, with the stand age generally 120-250 years. Nonstockable rock, bare ground, or brush fields occur on less than 10% of the area.

Strata 24 — MATURE/OVERMATURE - similar to Strata 23, except crown coverages are moderate, and range from 35-70%. Nonstockable rock, bare ground, or brush fields can occupy up to 25% of the area.

Strata 25 — MATURE/OVERMATURE - similar to Strata 23, except crown coverages range from 10-35%. These stands can exhibit an open, parklike condition, and often occur on drier slopes and habitats. Nonstockable rock, bare ground, or brush fields can occupy up to 60% of the area.

Strata 26 — PARTIAL CUTS - these stands are similar to Strata 22, except the age is generally over 100 years, with mainly large diameter mature/overmature individuals remaining. Crown coverage is >50%. These are typically shelterwood or sanitation/salvage cuts.

Strata 29 — BURNS - areas where a stand replacing wildfire has occurred and where less than 10% stocking of live trees is visible on the photo. These are generally less than 10-20 years old. These areas may have extremely heavy brush.

Strata 30 — SAPLINGS/POLES - areas stocked with saplings and/or poles (diameters from 2" to 7") which have regenerated naturally, as a result of fire, windstorm, etc. These stands may have anywhere from 100 to over a thousand trees per acre, and crown closure can range from 10% up to 100%. These areas may have a large component of brush. Stand age is from 10 to 50 years.

Strata 32 — SAPLINGS/POLES - these are plantations stocked with sapling/pole trees. These stands can have from 150 to 2000 trees per acre, averaging usually 200 "crop" trees. The crown closure in these stands can range from 10% to around 90%. These stands may have a large component of brush. Stand age is from 10 to 40 years.

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Strata 33 IMMATURE/MATURE - these are low stocked immature stands with a scattered component of mature overstory. Over 50% of the stand is immature sawtimber, generally from 50 to 100 years old. The crown coverage is from 10 to 35%, and the stands usually occur on drier slopes and less productive habitats. Nonstockable rock, brush fields, or bare ground may occupy up to 60% of the area.

Strata 34 IMMATURE/MATURE - similar to Strata 33 except these areas are moderately stocked with crown closures ranging from 35-70%. Nonstockable rock, brush fields, or bare ground may occur on 25% of the area.

Strata 35 IMMATURE/MATURE - similar to Strata 33 except these areas are heavily stocked, dense stands with crown closures from 70-100%. Typically these are even-aged, single storied stands. Nonstockable rock, brush fields, or bare ground usually occurs on less than 10% of the area.

Strata 41 UNSUITABLE - these are forested lands which are deemed to be unsuitable for any conventional silvicutural management, although salvage opportunities may occur on them. These are low-stocked stands with low site potential and an abundance or bare ground, rock outcrops, brush fields, or in the case of some spruce stands, a high water table. These stands may lie at the extremes in elevation, moisture regimes, or on over-steepened slopes. Canopy coverages generally range from 10-35%. Ages of the trees can vary, but generally they are mature to overmature.

Strata 42 UNSUITABLE - similar to Strata 41, except these areas have moderate crown closure of from 35 up to 70% or more. They are unsuitable for the same reasons listed above.

Strata 60 NONFOREST - areas with less than 10% crown coverage regardless of forest type. These areas include grassland, sagebrush lands, rock, meadows, etc.

Strata 61 NONFOREST (CULTIVATED) - These lands may or may not have once been forested, but they are currently utilized as croplands. Minimum size for this strata is 10 acres.

Strata 70 ASPEN/HIGH BRUSH - these areas have a hardwood component or high brush which represents 75% or more of the stand. This would include areas such as willow patches, alder glades, riparian stringers of cottonwood, aspen stands, or hillside patches of tall chokecherry and the like.

Strata 98 WATER (noncensus) - bodies of water less than 40 acres in size, or streams less than 120 feet wide.

Strata 99 WATER (census) - bodies of water greater than 40 acres in size, or streams more than 120 feet wide.

Strata numbers 20 through 35 are preceded by a Working Group (productivity) numeric code as follows:

1 = MIXED CONIFER HIGH	75% or more of the trees in the stand are PP-DF-GF-WL; sites capable of producing 85+ cu ft/ac/yr.
2 = MIXED CONIFER MODERATE	75% or more of the trees in the stand are PP-DF-GF-WL; sites capable of producing 50-85 cu ft/ac/yr.
3 = MIXED CONIFER LOW	75% or more of the trees in the stands are PP-DF-GF-WL; sites capable of producing 20-50 cu ft/ac/yr.
4 = SUBALPINE FIR/LODGEPOLE	60% or more of the trees in the stand are AF, or a fairly even mix of AF,LP,ES
5 = ENGELMANN SPRUCE	60% or more of the trees in the stand are ES; all productivities.
6 = LODGEPOLE PINE	60% or more of the trees in the stand are LP; all productivities.
7 = PONDEROSA PINE HIGH	25% or more of the dominant/codominant trees are ponderosa pine; sites capable of producing 85+ cu ft/ac/yr.
8 = PONDEROSA PINE MODERATE	25% or more of the dominant/codominant trees are ponderosa pine; sites capable of producing 50-85 cu ft/ac/yr.
9 = PONDEROSA PINE LOW	25% or more of the dominant/codominant trees are ponderosa pine; sites capable of producing 20-50 cu ft/ac/yr.

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